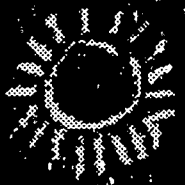
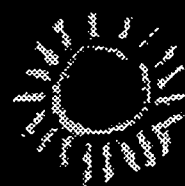


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MAC-MRAP 1.3.7
Rev. 01

Monticello Site Management Plan

July 1998



U.S. Department
of Energy



U.S. Department of Energy

Grand Junction Office
2597 B³/₄ Road
Grand Junction, CO 81503
FEB - 9 1999

Mr. Paul Mushovic and Mr. Jerry Cross
Environmental Protection Agency, Region VIII
Suite 500 Mail Stop 8HWM-FF
999 18th Street, Denver Place
Denver, CO 80202-2405

Mr. David Bird
State of Utah Department of Environmental Quality
Division of Environmental Response and Remediation
168 North 1950 West
Salt Lake City, UT 84116


Subject: Transmittal of the July 1998 Final Site Management Plan

Dear Mr. Mushovic, Mr. Cross, and Mr. Bird:

Enclosed are two copies each of the *July 1998 Final Site Management Plan*. Per our discussions on finalizing this document, only minor changes were made to the document with the exception of Chapter 5 tables which were revised to be current. The next version of this document will be submitted to your offices on August 31, 1999, for final concurrence by September 30, 1999. The next version of this document will be updated to be current through September 30, 1999.

If you have any questions concerning this proposal, please do not hesitate to contact me (970) 248-6091.

Sincerely,


Raymond Plienness
Project Coordinator

Enclosure (2 copies)

cc w/o enclosure:

J. Berwick, DOE-GJO

W. Evelo, DOE-GJO

M. Butherus, MACTEC-ERS

Project File Index: MRAP 1.3.7 (Thru J. Glasgow)

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Monticello Site Management Plan

July 1998

Prepared for
U.S. Department of Energy
Albuquerque Operations Office
Grand Junction Office

Prepared by
MACTEC Environmental Restoration Services, LLC
Grand Junction, Colorado

Project Number ENG-034-0038-03-000
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Acronyms and Abbreviations

AEC	U.S. Atomic Energy Commission
AL	Albuquerque Operations Office
ARARs	applicable or relevant and appropriate requirements
BLM	U.S. Bureau of Land Management
BLRA	baseline risk assessment
BMPA	Best Management Practice Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COR	Close-Out Report
CRP	Community Relations Plan
DOE	U.S. Department of Energy
EA	Environmental Assessment
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Difference
FFA	Federal Facility Agreement
ft	foot (feet)
FY	fiscal year
GCL	geosynthetic clay liner
GJO	Grand Junction Office
gpm	gallons per minute
HDPE	high density polyethylene
HQ	Headquarters
HASP	Health and Safety Plan
IRA	interim remedial action
IVC	independent verification contractor
in.	inch (inches)
IWMA	Interim Waste Management Area
LCR	leachate collection and removal
LDS	leak detection system
LTRA	Long-Term Response Action
LTSM	Long-Term Surveillance and Maintenance
mg/kg	milligram(s) per kilogram
mi	mile(s)
MMTS	Monticello Mill Tailings Site
MRAP	Monticello Remedial Action Project
MSGRAP	Monticello Surface- and Ground-Water Remedial Action Project
MVP	Monticello Vicinity Properties
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NEPA	National Environmental Policy Act
NOID	Notice of Intent to Delete
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act
OHM	OHM Remediation Services Corporation
OU	Operable Unit
pcb	polychlorinated biphenyls

Acronyms and Abbreviations (continued)

pCi/g	picocuries per gram
PCOR	Preliminary Close-Out Report
QA	quality assurance
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
QC	quality control
RAA	Remedial Action Agreement
RAC	Remedial Action Contractor
RAR	Remedial Action Report
RCRA	Resource Conservation and Recovery Act
RDC	radon daughter concentration
RD/RA	Remedial Design/Remedial Action
RDWP	Remedial Design Work Plan
RFP	request for proposal
RI/FS	Remedial Investigation/Feasibility Study
RO	reverse osmosis
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SCR	Site Characterization Report
SFMP	Surplus Facilities Management Program
SMP	<i>Monticello Site Management Plan</i>
SSAB	Site Specific Advisory Board
State	State of Utah
TDS	total dissolved solids
TES	threatened, endangered, and sensitive
TSCA	Toxic Substances Control Act
UMTRCA	Uranium Mill Tailings Radiation Control Act
UPDES	Utah Pollutant Discharge Elimination System
UDEQ	Utah Department of Environmental Quality
VCA	Vanadium Corporation of America
WL	working level
WWTP	wastewater treatment plant
UDOT	Utah Department of Transportation
yd ³	cubic yard(s)
ZVI	zero-valent iron

Executive Summary

The Monticello Site Management Plan (SMP) establishes the overall plan for remedial actions at the Monticello Mill Tailings Site and the Monticello Vicinity Properties Site. These sites are located at and adjacent to the City of Monticello, in San Juan County, Utah. Both sites are on the National Priorities List. The Department of Energy (DOE) is conducting response actions pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. In 1988, the U.S. Environmental Protection Agency (EPA), the State of Utah (State), and DOE entered into an Federal Facility Agreement (FFA) (DOE 1988b) that defines the roles and responsibilities of the parties for response action at the two sites. DOE is the lead agency and performs response actions pursuant to Section 120 of CERCLA/SARA. EPA and the State provide oversight of the response actions as described in the FFA.

This SMP provides an overview of the response actions underway and planned for the two sites. It is intended as a management tool; additional information regarding the nature and extent of contamination and specific response actions can be found in the references and the specific documents listed in the SMP.

The SMP is organized into eleven main sections. The sections correspond to the EPA model for management of Superfund sites (EPA 1993). Section 1.0 presents general background information and the document objectives. Section 2.0 identifies the management structure, roles, and responsibilities. Section 3.0 presents project objectives. Section 4.0 describes the project tasks, applicable or relevant and appropriate requirements compliance, document submittals, and corresponding schedules and costs. Section 5.0 presents the project milestones and schedules, including the enforceable milestones. Section 6.0 describes the Long-Term Surveillance and Maintenance Program. Sections 7.0 through 11.0 address environmental, health and safety protection; quality assurance; acquisition strategy; project control; and references.

At the back of the SMP is a folded plate showing a high level schedule for the Monticello projects.

The stipulated penalty milestones listed in Section 5.0 are the enforceable milestones unless superseded by revised schedules agreed to by EPA, the State, and DOE. The general process for revising enforceable milestones is presented in Section 5.0. Milestones identified in this document are enforceable through fiscal year 2001. Dates beyond fiscal year 2001 are targets only.

This is the first revision of the Site Management Plan. The original version of this document was finalized March 1995.

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1.0 Introduction

1.1 Site Background

1.1.1 Response and Enforcement History and Objectives

This *Monticello Site Management Plan* (SMP) establishes the overall plan for remedial action activities at the Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP) Site in Monticello, Utah. These sites are on the National Priorities List (NPL) and are being remediated in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. A Federal Facility Agreement (FFA) among the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and the State of Utah (State), pursuant to Section 120 of CERCLA/SARA, became effective December 1988 (DOE 1988b). DOE, EPA, and the State have agreed to perform response actions at the MMTS and MVP Site in accordance with the FFA. DOE is the lead agency that provides principal staff and resources to plan and implement response actions. Responsibility for oversight of activities performed under the FFA will be shared by EPA and the State; EPA is the lead agency with ultimate responsibility and authority but shares its decision making with the State (DOE 1988b, Section VIII.B).

DOE, as the responsible party, has established three projects for conducting response actions at the two sites:

- **Monticello Remedial Action Project (MRAP).** This project consists of Operable Units (OUs) I and II of the MMTS. A Record of Decision (ROD) was signed in September 1990 for this NPL site. This project includes the removal of tailings and tailings contaminated soil from the Millsite and peripheral properties to radium-226 cleanup standards of 5 picocuries per gram (pCi/g) to 15 pCi/g or to alternate (supplemental) standards that are higher. Remediation of other tailings related contamination under the tailings piles is also being addressed by this project.
- **Monticello Surface- and Ground-Water Remedial Action Project (MSGRAP).** This project consists of OU III of the MMTS. This project addresses groundwater and surface water contaminated by mill tailings and soil and sediment contaminated by tailings transported from the Millsite by Montezuma Creek. Cleanup standards have not been finalized for OU III. An Interim Remedial Action ROD is anticipated to be signed in September 1998.
- **Monticello Vicinity Properties (MVP) Project.** This project consists of the MVP Site, which currently contains 420 individual properties in eight OUs (OU A through OU H). A ROD was signed for this site in November 1989. This project includes the removal of tailings and tailings contaminated soil from vicinity properties to radium-226 cleanup standards of 5 pCi/g to 15 pCi/g or to supplemental standards.

Each of the projects is tracked separately in various DOE planning and management documents. However, interrelationships among these projects have been acknowledged in those documents. Together, the three projects are termed the Monticello Projects.

1.1.2 Purpose of the Monticello Site Management Plan

This SMP becomes the Work Plan identified in Section IX, Paragraph A, of the FFA. Pursuant to Section IX, Paragraph Q, of the FFA, the SMP shall be incorporated in and become an enforceable part of the Agreement. The SMP supersedes DOE's *Remedial Design Work Plan* (RDWP) (DOE 1992b). This revision of the SMP supersedes schedules presented in Remedial Design/Remedial Action (RD/RA) Work Plans for OU I and OU II completed in 1995.

This Plan focuses on four major objectives, including (1) present an overview of the organization of the Monticello Projects, (2) present the major phases and critical tasks for the projects, (3) provide a schedule that considers the critical interrelationships of project phases and tasks and, (4) establish milestones against which progress can be measured.

Implementation of this SMP is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), CERCLA, and DOE orders and directives. This SMP describes the planning, coordination, and oversight activities to be conducted by the FFA parties. Technical baseline and work-scope definition are provided by enclosed or referenced documents. Roles and responsibilities of the FFA participants are identified. Other concerns such as productivity, quality-assurance and quality-control requirements, and overall complexity are discussed in this SMP.

Sections of this SMP correspond to the EPA model for management of Superfund sites as defined in the *Enforcement Project Management Handbook* (EPA 1993). Section 1.0 presents general background and objectives. Section 2.0 discusses organization, roles, accountability, team commitment to project objectives, review and approval responsibilities, and coordination activities. Section 3.0 presents project objectives. Section 4.0 describes project tasks, applicable or relevant and appropriate requirements (ARARs) compliance, document submittal, and corresponding schedule and cost. Section 5.0 discusses project schedules, including enforceable milestones and nonenforceable target dates. Other considerations addressed in this SMP include long-term surveillance and maintenance, environmental, safety, and health protection; quality assurance management; acquisition strategy for DOE contractors and subcontractors; and project control systems.

1.1.3 Site Descriptions and History

The MMTS and MVP Site are located in San Juan County, in and near the City of Monticello in southeastern Utah (Figure 1-1). The Millsite encompasses a 110-acre tract of land owned by DOE that is surrounded by property owned by the City of Monticello, as well as private parties. The Millsite is situated in an east-trending alluvial valley formed by Montezuma Creek, a small intermittent stream that flows from the Abajo Mountains immediately to the west. Elevations at the Millsite range between 6,820 feet (ft) above sea level at the southeast corner to 6,990 ft at the northwest corner. Figure 1-2 shows the location of the three OUs for MMTS and a portion of the area currently being remediated as the MVP Site.

The original Monticello mill was constructed with government funding by the Vanadium Corporation of America (VCA) in 1941 to provide vanadium during World War II. VCA operated the mill until early 1944 and again from 1945 through 1946, producing vanadium, as well as a uranium-vanadium sludge. In 1948, the U.S. Atomic Energy Commission (AEC) purchased the site. Uranium and vanadium milling operations began again in 1949 under the auspices of AEC. Vanadium milling operations ceased in 1955, but uranium milling continued until 1960, when the mill was permanently closed.

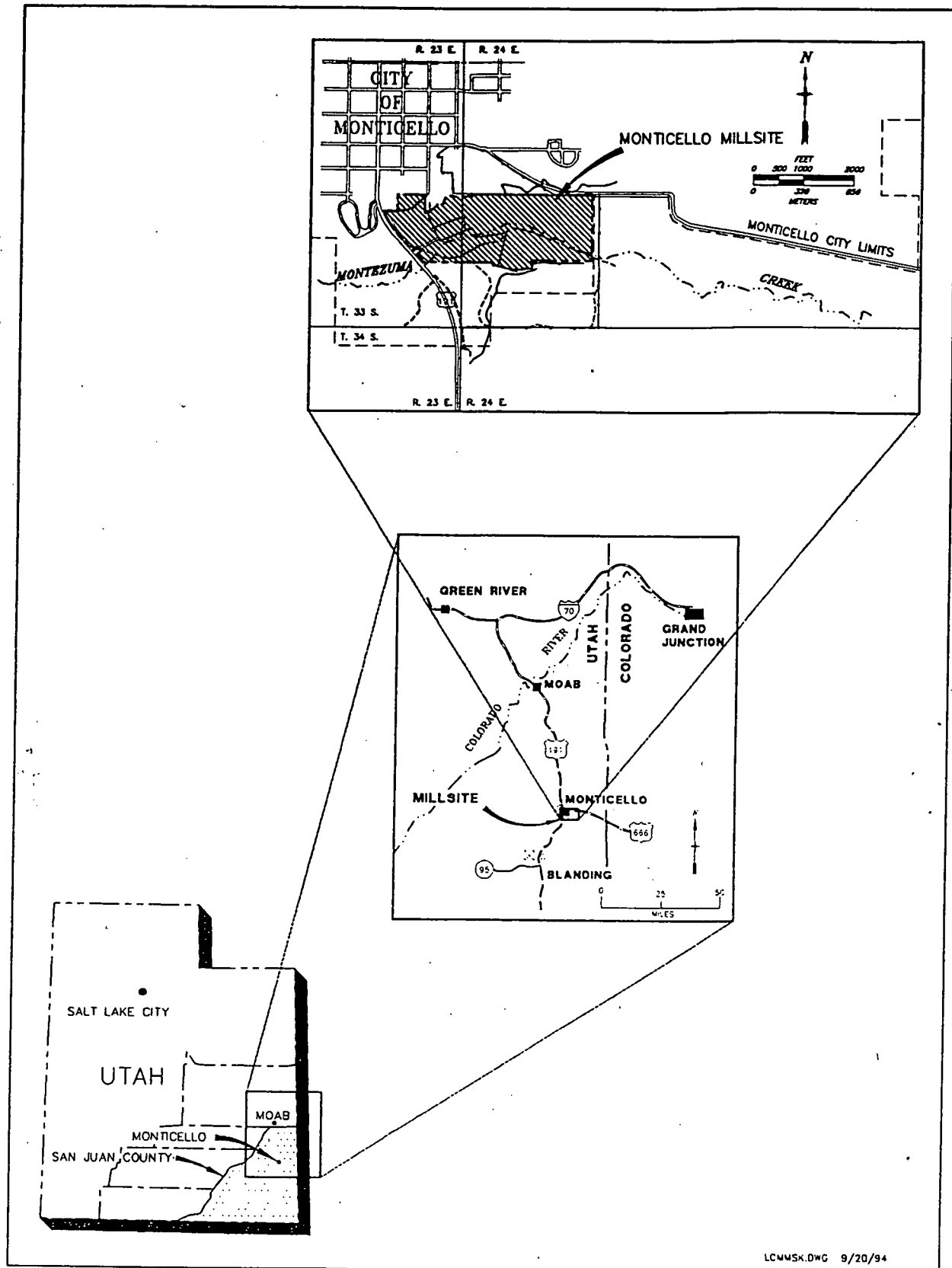


Figure 1-1. Regional Site Map

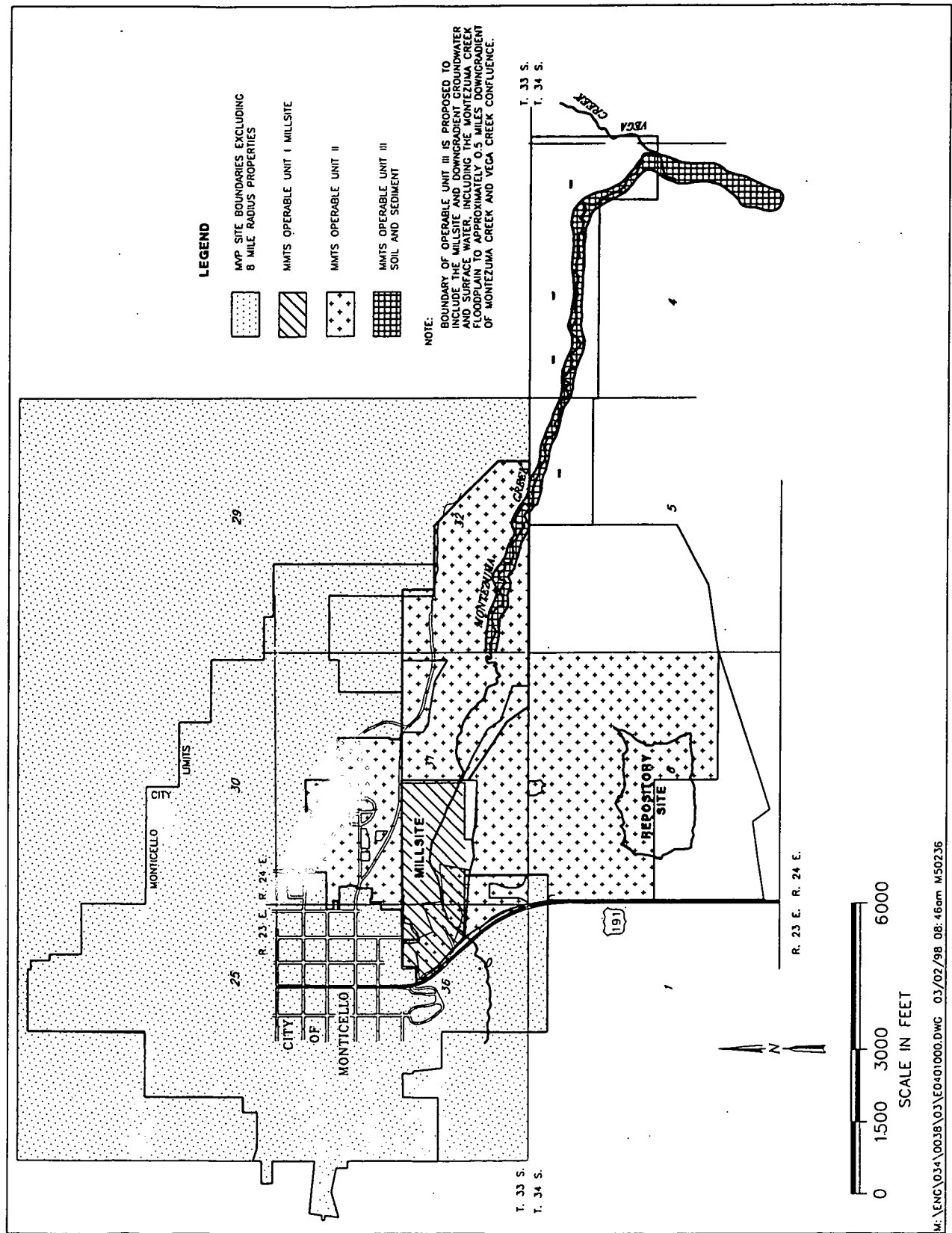


Figure 1-2. Locations of MMTS and MVP Site

Four tailings piles were left at the Millsite following the cessation of milling operations. The informal names for the separate tailings piles are the Carbonate Tailings Pile, the Vanadium Tailings Pile, the Acid Tailings Pile, and the East Tailings Pile (Figure 1-3). The Carbonate and Vanadium Tailings Piles received wastes from a salt-roast and carbonate-leach milling process until approximately 1955, when the acid-leach and carbonate-leach milling process was implemented. The acid and east tailings ponds were then constructed to receive the wastes from the acid leach and carbonate-leach process. The total combined in-place volume of the four tailings piles and surrounding contaminated soils and related byproduct material is approximately 2.2 million cubic yards (yd³).

In the summer of 1961, the AEC regraded, stabilized, and revegetated the East Tailings Pile by spreading tailings sand from the other three piles over its surface. After grading was completed, fill dirt and rock were spread over the tops and sides of all piles. The mill was dismantled by 1964. During the summer of 1965, 6 to 12 inches (in.) of topsoil was removed from the surrounding ore-storage areas and apparently used as fill material to partially bury the mill foundations. In 1974 and 1975, approximately 15,000 yd³ of contaminated soil was removed from former ore-storage areas and placed on the previously stabilized surface of the East Tailings Pile. These contaminated soils were not covered with clean soil before being graded, contoured, and reseeded.

DOE, under the authority of the Atomic Energy Act, initiated the Surplus Facilities Management Program (SFMP) in 1978 to ensure safe caretaking and decommissioning of government facilities that had been retired from service but still contained radioactive contamination. In 1980, the Millsite was accepted into the SFMP and MRAP was established. Currently, MRAP is being conducted by DOE's Environmental Restoration Program.

In 1983, remedial activities for vicinity properties were separated from MRAP with the establishment of the MVP Project. The MVP Site was listed in the NPL on June 10, 1986, and is being remediated pursuant to a ROD dated November 29, 1989 (DOE 1989). The selected remedy for cleanup of the MVP site is excavation of tailings, ore, and related byproduct material from vicinity properties; temporary storage on the Millsite; and final disposal in the same Repository described for OU I of the MMTS. Appendix A provides a list of the properties currently included in the MVP Site by OU.

The MMTS was placed on the NPL on November 16, 1989. In January 1990, DOE completed the *Remedial Investigation/Feasibility Study (RI/FS)-Environmental Assessment (EA)* (DOE 1990a) for the Millsite. The RI/FS-EA was supplemented to include analyses sufficient to enable DOE to assess the impacts of the remedial action alternatives as required under the National Environmental Policy Act (NEPA).

An MMTS ROD (DOE 1990b) was signed by all FFA parties in September 1990, and the selected remedies for OUs I and II were established. The remedy selected for OU I was excavation of tailings and other tailings-contaminated materials and their transport to a permanent on-site Repository south of the Millsite which is shown on Figure 1-2. The remedy selected for OU II was excavation of tailings, removal of ore and mill structures from peripheral properties, temporary storage on the Millsite, and final disposal in the same Repository as described for OU I. There are 29 properties in OU II, Appendix A provides a list of the properties.

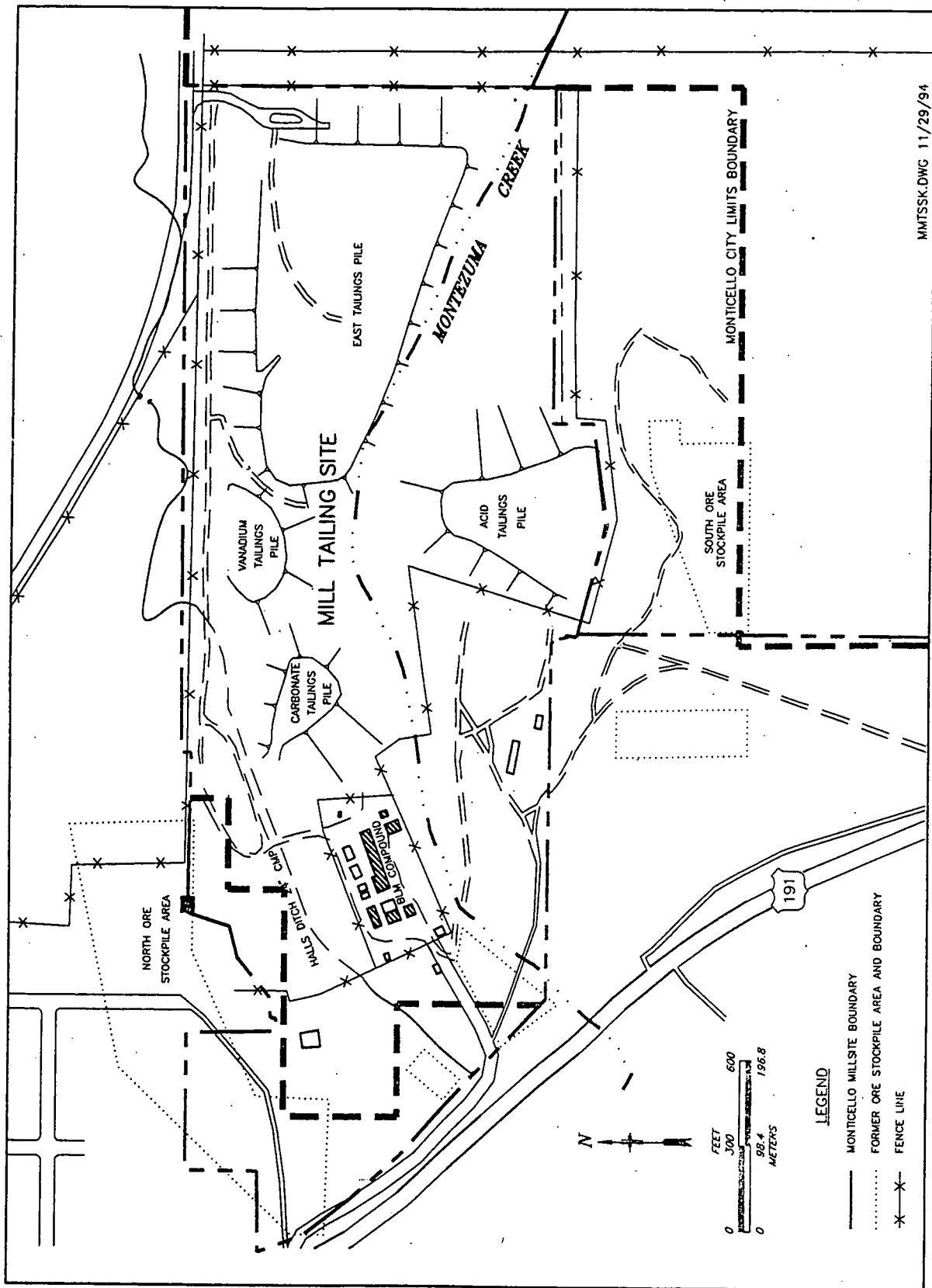


Figure 1-3. Monticello Millsite Tailings Impoundment Areas

A remedy has not been selected for OU III because of the unknown effects of Millsite tailings removal on contaminated surface water and groundwater. A remedy has been proposed by DOE for soil and sediments that have been contaminated by tailings transported by Montezuma Creek; the proposed remedy is currently being commented on by the public. There are nine properties included in OU III. Three of these properties are also included in OU II because contamination is also present on the properties in areas that are not associated with contamination deposited by Montezuma Creek. Appendix A lists the properties included in OU III.

Upon signing of the MMTS ROD, design of the on-site Repository was initiated. A conceptual liner design was completed in April 1993 (DOE 1993a) that incorporated evaluation of additional data collected on the hydrogeology of the Repository site. The Repository design was determined to be unacceptable because, on the basis of a performance assessment, it would not meet ARARs and because the constructibility of the design was questionable. For the above reasons and because the cost for construction of the Repository was increasing, DOE decided to evaluate other remedial action alternatives.

The alternatives analysis identified two viable alternatives, 1) a revised on-site Repository design that could meet ARARs, and 2) off-site disposal at the U.S. Nuclear Regulatory Commission (NRC)-licensed disposal facility south of Blanding, Utah. The on-site Repository was redesigned to incorporate the installation of a double-liner system that could control leakage from the Repository to the extent necessary to ensure protection of groundwater quality. In addition, the cost of the on-site disposal alternative was reevaluated and significant cost savings were identified in the cost of Repository construction. Public input on the selection of a preferred alternative was obtained through various activities, including public meetings, public opinion surveys, and use of a toll-free telephone number that the public could call to state opinions and preferences. The process culminated in facilitated meetings with the Site Specific Advisory Board (SSAB), which was established to provide focused public input into the DOE decision-making process. The 19-member board selected off-site disposal as the preferred remedy by only 1 vote, indicating essentially no clear consensus with regard to remedy selection. DOE reviewed the two alternatives using the nine criteria established in Title 40 of the *U.S. Code of Federal Regulations*, Part 300 (40 CFR 300) "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP) and on December 22, 1994, determined that the on-site alternative remained the preferred remedy.

1.1.4 Description of Operable Units

Remedial work conducted at a site is often divided into distinct segments known as operable units (OUs). Both the MMTS and the MVP Site have been divided into OUs. The OUs for the two sites are described separately below.

1.1.4.1 Monticello Mill Tailings NPL Site

The MMTS consists of three OUs:

- **Operable Unit I—Millsite Tailings and Millsite Property.** OU I consists of tailings impoundment areas and the area where the mill operations were conducted. There were less than 1,000,000 tons of ore processed at the Monticello Uranium Processing Mill. Approximately 2.2 million in-place yd³ of tailings and contaminated soil and debris will be removed from OU I and placed in a permanent on-site Repository. An additional amount of contaminated soils under the tailings piles will be removed

to minimize residual contamination that could contribute to continued groundwater contamination. The volume that will be removed will be determined during excavation.

- **Operable Unit II—Peripheral Properties.** OU II consists of private and DOE-owned properties peripheral to the Millsite that are contaminated by windblown or stream-deposited tailings or by concentrations of radioactive material from ore-buying stations and one property, which is now owned by the City of Monticello, where mill facilities were located. Contaminated material has been removed from peripheral properties and stored on the Millsite since 1992. An estimated 548,247 yd³ of contaminated material will be removed from the peripheral properties and placed in the on-site Repository. On three government-owned peripheral properties, supplemental standards may be applied on all or parts of the properties. Application of supplemental standards are being considered to minimize environmental damage from remedial action and at the request of DOE. Appendix A lists the properties for which application of supplemental standards are being considered in OU II.
- **Operable Unit III—Surface Water, Groundwater, and Contaminated Sediments in Montezuma Creek Canyon.** OU III consists of contaminated groundwater and surface water, and soil and sediment contaminated by tailings transported by Montezuma Creek. Contamination in the shallow groundwater system underlying the Millsite and in the surface water in Montezuma Creek is known to exceed State standards for water quality. A remedy for restoration of contaminated groundwater and surface water will be selected pursuant to the CERCLA process. Site characterization prior to Millsite excavation has been completed and the draft final Remedial Investigation Report (DOE 1998b) and a revised draft Feasibility Study have been submitted to EPA and the State for review. DOE has proposed an interim remedial action (IRA) to prevent potential exposure to contaminated groundwater, to initiate remedial actions consistent with the final remedy for OU III, and to better understand surface water and groundwater contamination following the excavation of contaminated material from the millsite. At the conclusion of the IRA (in 2004) the draft Feasibility Study will be revised. A preferred final remedy will be described in a Proposed Plan which will be subject to public comment. After consideration of public comment and review of the Administrative Record, EPA, the State, and DOE will concur on the remedy.

Potential remedies (alternatives) for soil and sediment in OU III were evaluated in an Alternatives Analysis (AA) (DOE 1998a). The alternatives include removal actions (i.e., excavation of contaminated soil and sediment) as well as remedies that apply supplemental standards. DOE proposes that the AA will satisfy the requirements of an Engineering Evaluation/Cost Analysis (EE/CA) for a non-time-critical removal action because it includes all required elements of an EE/CA. The AA evaluates the alternatives based on the nine CERCLA evaluation criteria (as required by a feasibility study) instead of the three criteria (i.e., effectiveness, implementability, and cost) typically used in an EE/CA. DOE has recommended removal actions at alternative cleanup levels above the 5 pCi/g or 15 pCi/g cleanup criteria requiring excavation of contaminated soil and sediment, and application of supplemental standards for Upper and Lower Montezuma Creek and application of supplemental standards in Middle Montezuma Creek. Following the public comment period on the AA and recommended response action, the removal actions will be documented in an Action Memorandum followed by implementation of a non-time-critical removal action. Supplemental standards applications will be prepared if contamination above the standards in 40 CFR 192.12 is left in place.

1.1.4.2 Monticello Vicinity Properties NPL Site

The MVP Site currently contains 420 properties in eight OUs, Appendix A lists each property and the date it was included. An estimated 128,469 yd³ are expected to be removed from the vicinity properties. Each OU is defined below:

- **Operable Unit A—Properties Included in the Federal Facilities Agreement.** OU A consists of 104 properties.
- **Operable Unit B—Properties Included Subsequent to the Federal Facilities Agreement.** OU B consists of 243 properties.
- **Operable Unit C—Disputed Properties.** OU C consists of 34 properties that have tailings contamination presumed to be from the Dry Valley Milling operation. DOE's responsibility for remediating these properties was a disputed issue, which is why they are called disputed properties.
- **Operable Unit D—Properties Contaminated with Potential Hazardous Substances.** These properties were initially included in OUs A, B, or C. During site assessments for radiological contamination or during remedial action activities, the presence of concentrations of nonradiological hazardous substances that could present an unacceptable risk to human health and the environment was identified. Nonradiological hazardous substances that exceed risk based cleanup standards were remediated on all but one property where ongoing operations limited the extent of cleanup. Six properties have been included in this OU.
- **Operable Unit E—Properties Crossed by Halls' Ditch.** There are eight properties in OU E that were crossed by an irrigation ditch called Halls' Ditch. The ditch, which crossed the Millsite, was contaminated with tailings. The ditch was remediated but not reconstructed as agreed to by the owner of the ditch.
- **Operable Unit F.** OU F consists of 10 properties, previously included in OUs A, B, or C, where owner negotiations or owner refusal to allow remediation have delayed remediation. With the exception of one property, owner negotiations and access have been completed or obtained for these properties. The designs for remediation of the properties have been completed.
- **Operable Unit G.** OU G consists of 10 properties included in the MVP Site since the beginning of 1995. Five of these properties were included as a result of the Site Boundary Program.
- **Operable Unit H—Supplemental Standards.** OU H presently contains five properties which were originally being considered for supplemental standards. One is a privately owned parcel with piñon/juniper woodlands and four are associated with the Highway 191 embankment owned by the Utah Department of Transportation (UDOT). Supplemental standards also are being considered for streets and utilities in the City of Monticello rights-of-way. These areas have not been included as properties, but are located within the City of Monticello, and, therefore are considered part of the MVP Site.

1.1.5 Monticello Remedial Action Facilities

This section contains a brief narrative description of the facilities that have been or are under construction to support the CERCLA response actions. See Figure 1-4 for locations of these facilities.

1.1.5.1 Millsite

Millsite Access Area—The Millsite access area is located in the northeast corner of the Millsite. The access is the entry for subcontractor vehicles transporting tailings from the vicinity and peripheral properties to the Interim Repository where tailings are stored prior to final disposal in the Repository. It is also an access and egress point for work on the Millsite. A decontamination pad in the access area is used to remove contamination from equipment leaving the Millsite. Scanning equipment is also located in the access area which is used to scan personnel as they leave the Millsite to ensure that they did not become inadvertently contaminated while working on site. The area will be decommissioned.

Ponds 1 and 2—Pond 1 is located on the northeastern side of the Millsite. The pond collects water used to decontaminate vehicles exiting the Millsite. The water is then pumped out and used for dust control on contaminated areas of the Millsite. Pond 2 was designed as a temporary pond to collect contaminated runoff from the Interim Repository. The pond was made inactive due to redesign and construction of alternate on-site drainage controls following a release of untreated stormwater into Montezuma Creek in 1995. The Pond was modified to serve as the recirculation pond for the decontamination facility at the Millsite end of the haul road between the Millsite and the Repository. Since the decontamination facility was abandoned, Pond 2 use has been limited to collecting runoff from a very small area around the pond.

Pond 3—Pond 3 collects contaminated water from the Millsite area through a system of runoff-control ditches. Water removed from tailing excavations is also pumped to Pond 3. Pond 3 holds approximately 5 million gallons of water which can be used for dust control in contaminated areas on the Millsite and in the Repository. The water level in Pond 3 must be maintained to ensure capacity for a single 25-year, 24-hour storm event. When this water level is exceeded, water is pumped from Pond 3 to the wastewater treatment plant (WWTP) for treatment to established effluent standards and discharge to Montezuma Creek. Alternatively, depending on water management requirements, water can also be pumped to Pond 4 via a pipeline that was installed during September and October 1997.

Wastewater Treatment Plant—The Millsite WWTP is used to treat the water from Pond 3 before it is released to Montezuma Creek. Samples of the discharged water are taken to ensure compliance with Utah Pollutant Discharge Elimination System (UPDES) standards. The WWTP is designed to remove heavy metals, radionuclides, and total dissolved solids (TDS) from contaminated ground and surface waters. Two treatment processes are currently in use. One is precipitation followed by filtering with a final polishing step to remove selenium. The other is a reverse osmosis (RO) treatment process. These processes are used in combination or separately depending on influent water quality. The equipment comprising the precipitation process is housed in three 48-foot trailers (Trailers 1, 2, and 3). Precipitation in Trailer 1 removes certain heavy metals and radionuclides. Adjustments to the pH of the water processed in Trailer 1 are made in Trailer 2, which also contains a membrane filtration system for filtering out particulate matter. Trailer 3 contains zero-valent iron (ZVI) columns that are being field-tested for removal of selenium from the wastewater prior to discharge to Montezuma Creek. The RO unit removes all contaminants of concern but generates a brine waste stream which must be managed. Use of the RO is primarily to remove selenium and TDS. The processed water from the RO unit can be blended with water from the trailers. The WWTP was initially operated at the MMTS in May 1995. This

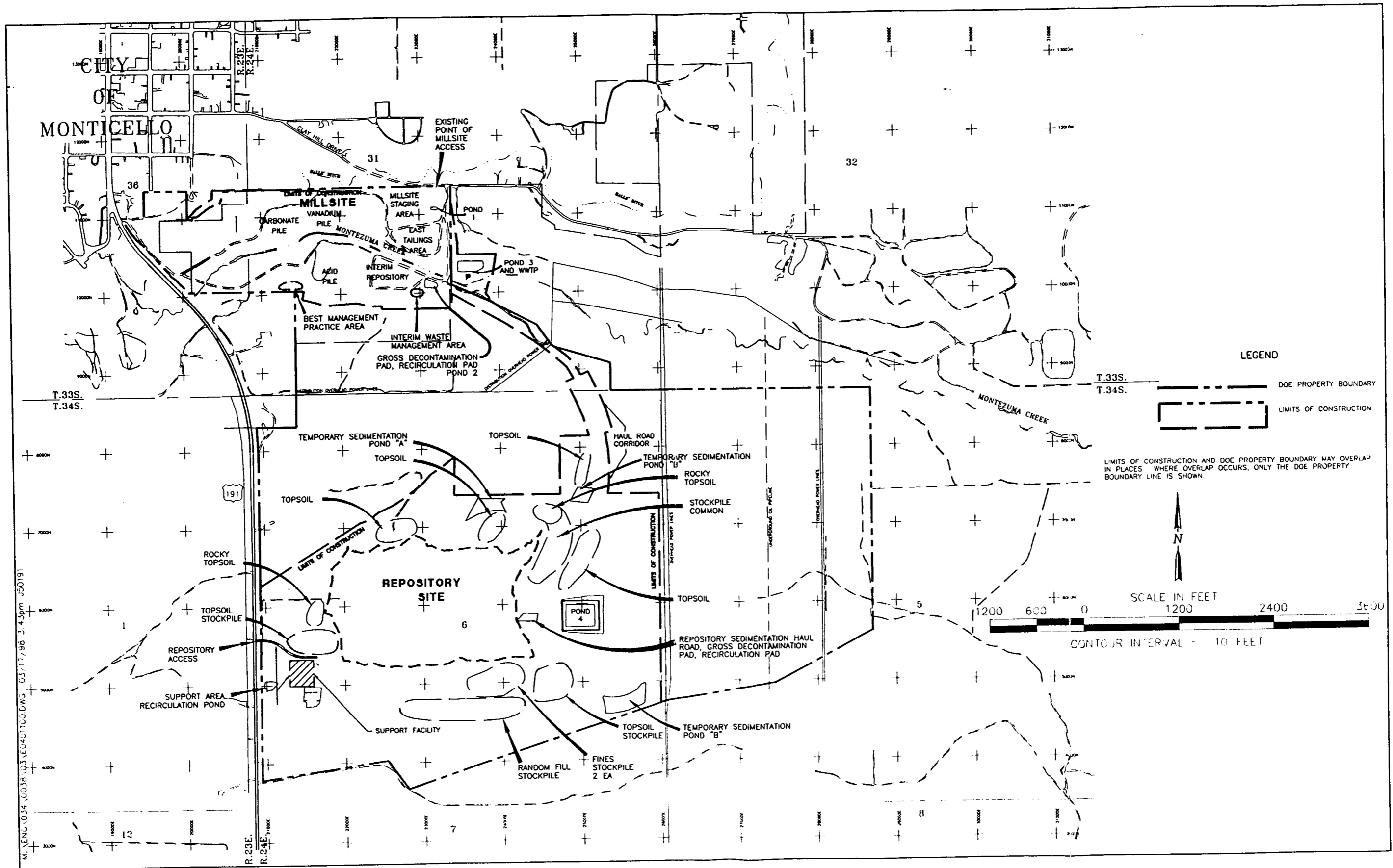


Figure 1-4. Site Overview Map

operation was defined as testing of wastewater in Pond 3 to determine removal efficiencies, but a substantial volume of water was treated in 1995 and 1996. Trailer 3 was initially placed into service in 1997 with an activated alumina resin following modifications completed in the summer of 1996. Additional modifications were made in 1997 to meet the barium standard established by the State of Utah on April 28, 1997. These modifications were not successful and the RO unit was brought in to ensure that the UPDES standards could be met. The plant has a maximum capacity of 250 gallons per minute (gpm).

Interim Waste Management Area—Remediation of both the MVP Site and MMTS has and will generate wastes that require special management. An Interim Waste Management Area (IWMA), was established on the Millsite in June 1995 to store and manage these wastes. The IWMA is operated in conformance to the State of Utah Hazardous Waste Management Rules. During the 1997 construction season, wastes in the IWMA were treated to meet the Repository waste acceptance criteria and disposed of in the Repository. The only treatment required was to render liquid wastes non-liquid. All wastes were removed from the IWMA in the fall of 1997 and winter of 1998.

The IWMA will remain to store waste that may be encountered later in 1998 that require special management prior to disposal in the Repository or for storage on site prior to being transported off site to a licensed treatment and disposal facility. Closure of the IWMA is expected late in the 1998 construction season. The *Special Waste Management Plan* (DOE 1997c) includes the Closure Plan for the IWMA.

Best Management Practice Area—The Best Management Practice Area (BMPA) is used for the storage of contaminated soils that require more containment than that attained at the Interim Repository, but are not hazardous or liquid wastes requiring management at the IWMA. To date, the type of wastes stored at the BMPA are soil contaminated with waste oil that also contains lead in concentrations up to 1,500 milligrams per kilogram (mg/kg). The BMPA is located to the west of the Acid Tailings Pile, south of Montezuma Creek. An area has been bermed and plastic laid over the bermed area. This additional containment will prevent uncontrolled release of the waste material. The wastes currently stored in the BMPA will be placed in the Repository during the 1998 construction season. A new BMPA will be constructed if required.

Interim Repository—The Interim Repository is located on the south side of the Millsite east of the Acid Tailings Pile. The area is used for the interim storage of tailings from the MVP and peripheral properties. The area has a capacity of 200,000 yd³. The area includes access roads, drainage control structures, and Pond 2. Runoff from this area is routed to Pond 3 via the onsite collection ditches. The materials placed here may be moved to the permanent Repository during construction season 1998.

1.1.5.2 Haul Road

Trucks will be used to transport tailings along the 1.2 mile (mi) haul road that has been constructed between the Millsite and the Repository. Use of the dedicated haul road will reduce remediation traffic on State Highway 191. Decontamination pads were constructed at both ends of the haul road. In 1997, trucks were decontaminated by removal of visible loose contamination, but not for free release. The purpose of the decontamination was to ensure that contamination on the trucks did not fall off of the trucks and contaminate the haul road. Starting in 1998 the haul road will be operated as a contaminated haul road to improve haul cycle times. Runoff from the haul road will be contained and drained to Pond 3. The area around the haul road will be periodically scanned to ensure contamination is being contained on the haul road.

The haul road embankment and most of the haul road fill will be removed as part of the demobilization effort and the haul road width will be reduced. All disturbed areas, except the roadway itself, will be reclaimed, including wetlands displaced by the embankment. Members of the community have expressed interest in leaving a road in place for public use after remediation activities are completed.

1.1.5.3 Repository

A double-lined Repository was constructed approximately 1 mi south of the Millsite. It is designed to contain 2.6 million yd³ of contaminated material. A multi-layer cover that includes a radon barrier will be constructed after placement of contaminated materials is complete. The top of the cover will consist of native vegetation to blend in with the surrounding terrain. Facilities associated with the operations in the Repository area are described below.

Runoff Control Ditches/Sediment Ponds—Runoff control ditches have been constructed around all disturbed areas in an effort to limit erosion. These ditches channel water to one of three sediment ponds located around the Repository. The sediment ponds are designed to trap the sediment while allowing water to pass through. There are two sediment ponds located along the north side of the Repository. The third pond is situated on the southeast corner.

Stockpiles—There are currently eleven stockpiles surrounding the Repository. The primary purpose of these stockpiles is to segregate the different soils excavated from the Repository. Each type of soil is used for a specific component of the Repository. There are three primary types of soils:

- *Topsoil* will be used as the final layer on the cover of the Repository.
- *Random fill* is used for construction of Repository berms
- *Select fill* is used for construction of the soil layer under the Repository liner and will be used for cover construction.

Support Area—The support area is located west of the Repository, just off of Highway 191. This area contains the office trailers, lunchrooms, restrooms, and other administrative and employee facilities required for contractor and subcontractor use during remediation and restoration activities. The area was constructed in 1995 prior to initiating Repository construction.

Pond 4—Pond 4, located east of the Repository, is used to contain water and leachate removed from the Repository leachate collection and leak detection system(s). It is also designed to collect runoff during tailings placement prior to cover construction. During this phase, water may require treatment at the WWTP. Over the long-term, the pond has been sized to function as an evaporation pond. The pond has a triple liner to ensure that groundwater quality will be protected.

DOE will continue to monitor Pond 4 after the Repository is filled with tailings and a protective cover is in place. The pond is expected to remain in use for up to 20 years depending on the flow of leachate from the Repository. Pond 4 will be decommissioned when liquid draining from the Repository becomes minimal or nonexistent. At that time, DOE may replace the pond with smaller storage tanks.

1.1.6 Schedule of Major Activities

Major activities completed or scheduled for completion of the Monticello Projects are listed in Table 1–1. These dates are late dates for completion of the activities, working schedule dates are earlier. The dates listed in Table 1–1 are consistent with dates listed in Section 5.0.

Table 1–1. Schedule of Major MMTS and MVP Activities

Operable Unit	Completion Date	Activity
MRAP—OU I	April 28, 1995	Pre-Final Design and Specification Package for Millsite Remediation (Complete)
	October 27, 1995	On-site activities initiated. (Notice to Proceed issued) (Complete)
	August 31, 1999	Complete tailings removal
	February 1, 2000	Notice of Award for Millsite restoration
	September 30, 2000	Complete Repository construction
	November 30, 2000	Submit Draft-Final Remedial Action Report for Millsite Remediation
	July 17, 2001	Complete Millsite restoration
MRAP—OU II	December 31, 1998	Complete design package submittals
	November 30, 1999	Complete construction
	February 28, 2000	Submit Draft-Final Remedial Action Report
MSGRAP—OU III	February 2, 1998	Submit Draft-Final <i>Remedial Investigation</i> report (complete)
	February 2, 1998	Submit Draft-Final <i>Alternatives Analysis</i> for soil and sediment (complete)
	March 16, 1998	Submit Draft-Final Interim Proposed Plan (complete)
	March 23, 1998	Submit <i>Draft-Final Remedial Action Design</i> for soil and sediment (complete)
	March 30, 1998	Submit Revised-Draft (pre-IRA) <i>Feasibility Study</i> for surface water and groundwater (complete)
	May 5, 1998	Submit Draft-Final Action Memorandum for soil and sediment (complete)
	August 17, 1998	Submit Draft-Final Interim ROD for surface water and groundwater
	November 30, 1998	Submit <i>Draft-Final RD/RA Work Plan for Surface Water and Groundwater Interim Remedial Action</i>
	January 28, 1999	Submit <i>Draft-Final Supplemental Standards Applications</i> for soil and sediment
	September 30, 1999	Complete remedial action for soil and sediment
	October 30, 1999	Submit <i>Draft-Final Design for Surface Water and Groundwater Interim Remedial Action</i>
	May 15, 2004	Submit Draft-Final Feasibility Study (post-IRA) for Surface Water and Groundwater
	December 15, 2004	Submit Draft-Final Proposed Plan

Table 1-1 (continued). Schedule of Major MMTS and MVP Activities

Operable Unit	Completion Date	Activity
MVP Site—OU A	August 15, 2005	Submit Draft-Final Remedial Design Remedial Action Work Plan for restoration of surface water and groundwater
	May 15, 2005	Submit Draft-Final ROD
	June 15, 2006	Submit Pre-Final Design for restoration of surface and groundwater
	September 15, 2006	On-site activities initiated for restoration of surface water and groundwater (Notice to Proceed issued)
	September 30, 1996	Construction Complete
MVP Site—OU B	November 8, 1996	Submit Draft-Final Remedial Action Report
	September 30, 1997 (complete)	Construction Complete
MVP Site—OU C	December 24, 1997 (complete)	Submit Draft-Final Remedial Action Report
	June 18, 1997 (complete)	Construction Complete
MVP Site—OU D	(October 15, 1997 (complete)	Submit Draft-Final Remedial Action Report
	November 4, 1997 (complete)	Construction Complete
MVP Site—OU E	March 18, 1998 (complete)	Submit Draft-Final Remedial Action Report
	December 3, 1997 (complete)	Construction Complete
MVP Site—OU F	March 18, 1998 (complete)	Submit Draft-Final Remedial Action Report
	July 10, 1998	Construction Complete
MVP Site—OU G	December 24, 1997 (complete)	Submit Draft-Final Remedial Action Report
	December 11, 1997 (complete)	Construction Complete
MVP Site—OU H	September 12, 1998	Submit Draft-Final Remedial Action Report
	December 28, 1998	Construction Complete
	April 29, 1999	Submit Draft-Final Remedial Action Report

1.2 CERCLA Compliance Strategy

The MMTS and MVP Site are listed on the NPL. They are being remediated pursuant to CERCLA/SARA and the requirements of the NCP (40 CFR 300), as well as EPA guidance and directives on the implementation and interpretation of CERCLA. DOE has entered into an FFA, which states in part, "Pursuant to Section 120(a) of CERCLA, as amended, DOE agrees that it is bound by this Agreement and that the terms of this Agreement may be enforced against DOE. . . ." The FFA further states, "The activities undertaken pursuant to this Agreement are subject to approval by EPA and shall

not be inconsistent with CERCLA/SARA and the NCP. . . ." The FFA is a legal commitment by DOE to comply with CERCLA.

DOE will work continuously and cooperatively with EPA and the State to define and resolve compliance issues in a timely manner. DOE will ensure that the projects conform with CERCLA requirements by assigning project personnel who are familiar with CERCLA requirements and are experienced managers of major projects under CERCLA/SARA; by providing timely and updated training to project personnel; and by ensuring that project personnel have access to legal, financial, and policy guidance needed to resolve compliance issues.

1.2.1 Enforcement Actions Taken Against DOE

In February and March of 1995, releases occurred from Ponds 2 and 3 that resulted in exceedence of the UPDES standards for discharge into Montezuma Creek. EPA assessed a stipulated penalty against DOE in the sum of \$40,000 for the period of the releases and failure to construct, complete, and maintain proper controls to prevent the releases.

This occurrence resulted in implementation of several corrective actions, including installation of an overflow connection from Pond 2 to Pond 3, construction of a diversion ditch around Pond 2, completion of measures to increase the capacity of Pond 3, and installation of the WWTP for treatment of water from Pond 3.

In December 1996 and April 1997, discharges from the WWTP and Pond 2 occurred that were above UPDES standards. The Utah Department of Environmental Quality (UDEQ) has notified DOE that any further exceedence of effluent standards will be treated as a noncompliant discharge and past exceedences will be included retroactively in any enforcement action taken.

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2.0 Management Structure, Roles, and Responsibilities

Management roles and responsibilities for agencies involved in the completion of remedial action activities at the MMTS and MVP Site are described in this section and in the FFA (DOE 1988b). Management must ensure that response actions are fully consistent with the requirements of CERCLA and NCP, and that an accountability framework is established. The roles, responsibilities, and management relationship among DOE, EPA, and the State presented in this SMP are summarized from the FFA. The FFA establishes a cooperative approach among EPA, the State, and DOE for conducting response actions. DOE management structure is further described in this section to show the relationship among involved DOE offices.

2.1 U.S. Environmental Protection Agency

Responsibility for oversight of the activities performed under the FFA are shared by EPA and the State, with EPA being the lead agency for oversight (DOE 1988b). Activities undertaken under the FFA are subject to approval by EPA, after consultation with the State.

EPA has assigned remedial project managers in the Office of Ecosystems Protection and Remediation, Federal Facilities Program of EPA Region VIII, located in Denver, Colorado.

2.2 State of Utah

The State provides project oversight to address State issues and concerns. EPA may delegate to the State the review of specific tasks and shall accept recommendations from the State regarding the acceptability of any particular submittal (DOE 1988b). The State participates in the planning, selection, and implementation of the remedial action.

The State has assigned remedial project managers in the UDEQ Division of Environmental Response and Remediation, located in Salt Lake City, Utah.

2.3 U.S. Department of Energy

DOE is a responsible party with respect to present and past releases at the Monticello site(s) (DOE 1988b). DOE is also the lead agency responsible for providing resources to implement response actions at the sites. Figure 2-1 shows the major organizational elements of DOE project management structure, and the following paragraphs discuss the components of the structure that are necessary to accomplish the response actions at the sites.

The Assistant Secretary for Environmental Management is the approving official who has overall responsibility and authority within DOE for the Monticello Projects. DOE-Headquarters (HQ) point of contact for the Monticello Projects is assigned under the Office of Southwestern Area Programs, Division of Off-Site Programs. The Manager of the DOE Albuquerque Operations Office (AL) has been delegated the responsibility and authority for the field management of the Monticello Projects. This authority has been delegated to the Manager of DOE Grand Junction Office (GJO) through the Assistant Manager for Environmental/Project Management.

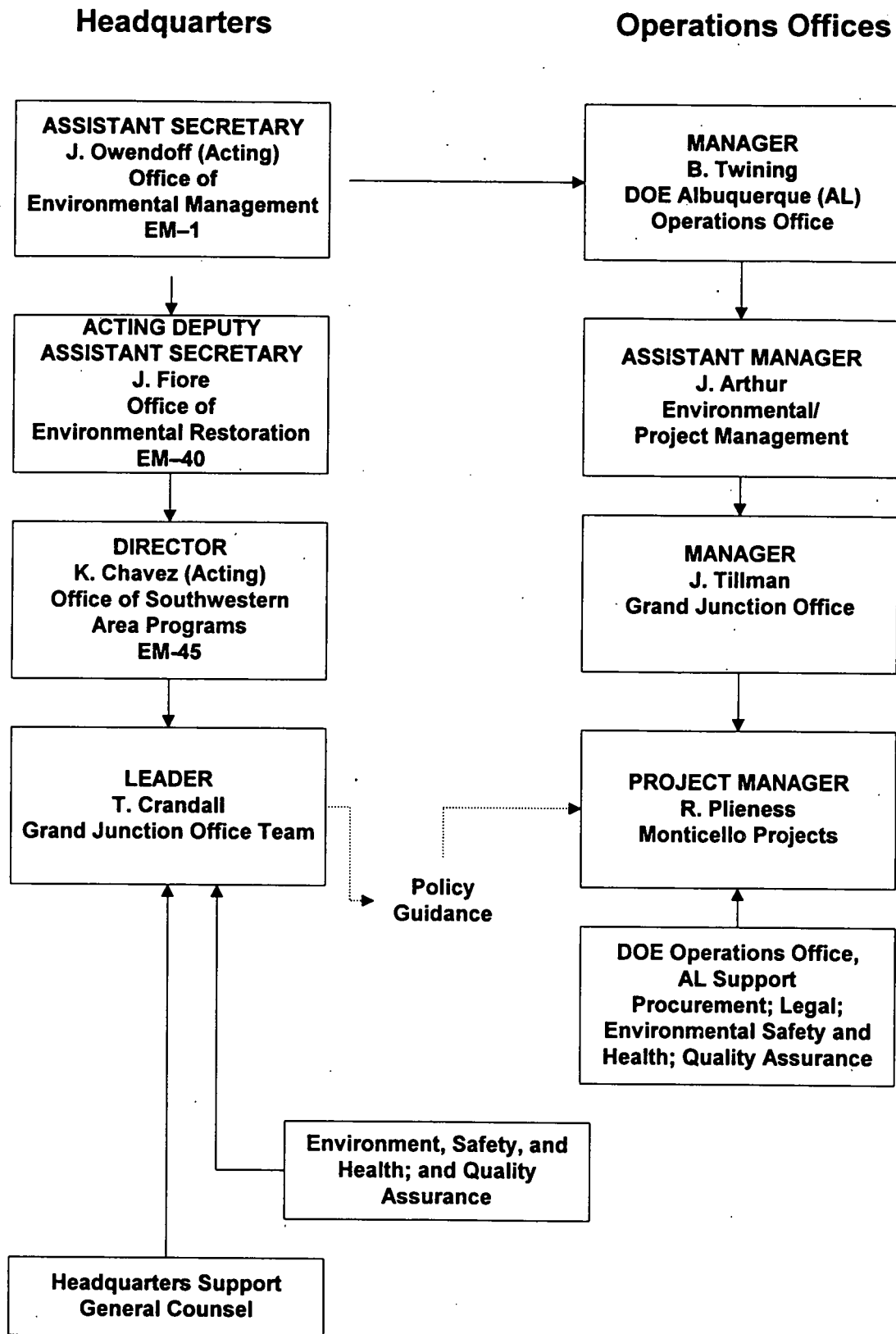


Figure 2-1. DOE Project Management Structure

The DOE-GJO Manager has been delegated the authority, responsibility, and accountability for overall project implementation and contract administration. The DOE-GJO Manager assigns the DOE-GJO Project Managers, one of whom also acts as the Project Coordinator, as required by the FFA. The Project Managers are the DOE-GJO implementing officials and have been delegated the authority from the DOE-GJO Manager for day-to-day implementation, management, and direction of the projects. The following Project Managers have been assigned by DOE:

- Lead Project Manager who is responsible for overall project integration, daily project coordination, and is assigned the responsibilities of the Project Coordinator. The Project Coordinator is the formal GJO point of contact for EPA, the State, and DOE-HQ for the Monticello Projects.
- OU I Project Manager/Site Engineer who also manages the remediation of the OU II peripheral properties that are being remediated with the Millsite.
- OU II Project Manager who manages the remediation of the OU II peripheral properties that are not being remediated with the Millsite, and properties in the MVP site.
- OU III Project Manager who manages the remediation of soil and sediment on OU III peripheral properties, the surface water and groundwater IRA, and preparation of surface water and groundwater decision documents.

The OU I Project Manager/Site Engineer works in Monticello, Utah, to oversee field operations associated with Millsite and associated peripheral property remediation and Repository construction.

The GJO has also assigned matrix support for procurement, public affairs, health and safety and environmental compliance to the Monticello Projects. The Office of Chief Counsel at the AL is the legal advisor to the projects. Financial, procurement, and real estate management support is also provided by the AL.

The DOE-GJO has contracted with MACTEC-ERS as the remedial action contractor (RAC). The RAC is responsible for ensuring that all remedial activities are executed in compliance with the FFA, regulatory, and health and safety requirements. The RAC Program Manager reports directly to the DOE-GJO Project Managers and has the ultimate responsibility for implementing the project scope and schedule defined by the DOE Project Managers. The RAC has subcontracted remediation activities for OU I and associated Millsite peripheral properties to OHM Remediation Services Corporation (OHM). The RAC has or will subcontract remediation activities on the vicinity properties and non-Millsite peripheral properties to several subcontractors. Subcontracts will also be required for remediation work that may be conducted under MSGRAP. The RAC has assigned Project Managers to each of the Monticello Projects who report to the Program Manager and are responsible for the day-to-day implementation, management, and direction of the projects.

2.4 Management Review and Concurrence Process

Section XII of the FFA (DOE 1988b) establishes procedures to be used by DOE, EPA, and the State for review, comment, and response to comments on documents established as secondary or primary documents. Primary documents include those reports that are major, discrete portions of the RI/FS or RD/RA activities. Secondary documents include those reports that are discrete portions of the primary documents and are typically input or feeder documents.

DOE-GJO is responsible for the preparation of primary and secondary documents according to established time schedules. DOE-GJO must simultaneously submit the documents to EPA and the State. For both primary and secondary documents, EPA and the State must provide comments within 60 calendar days unless otherwise agreed to by all parties.

DOE-GJO has 60 calendar days to respond to the comments by simultaneously sending a copy of the responses to EPA and the State unless otherwise agreed to by all parties. For a draft primary document, a draft final primary document incorporating the comments is required, along with the comment responses. The draft final primary document will become a final primary document within 30 days unless dispute resolution is invoked. Historically, on Monticello Projects, additional comments have been received by DOE from EPA and the State during the final review period and have been addressed by DOE in the submittal of a final primary document.

2.5 Routine Reporting Requirements

The FFA establishes that DOE shall submit monthly written progress reports to EPA and the State. These reports describe the actions that DOE has taken during the previous month to implement the requirements of the FFA. The progress reports are required to be submitted on the 20th day of each month. The monthly report has been modified to include a description of issues that must be resolved for timely progress on the Monticello Projects and a list of documents expected to be submitted during the two to three months following the submittal of the monthly report. The monthly report will also include a calendar of upcoming field activities.

2.6 Meetings of the Project Managers

EPA, the State, and DOE project managers will meet quarterly to review project progress and discuss issues. In addition to these quarterly meetings, the project managers may meet more frequently to review specific technical and compliance issues.

3.0 Project Objectives

The overall objective of remedial action at the Monticello Sites is to mitigate risk from exposure to hazardous substances from the Millsite and included peripheral and vicinity properties to levels that are protective of human health and the environment and to comply with ARARs. Remedies have been selected for the MVP Site and OUs I and II of the MMTS. The objective of the MVP Project and OUs I and II of the MMTS is to implement the selected remedies. The cleanup objective for OU III of the MMTS is to select a final remedy that is protective of human health and the environment and complies with ARARs.

The objectives for each of the Monticello Projects are described in detail in this section.

3.1 Monticello Remedial Action Project

3.1.1 Operable Unit I—Millsite Tailings and Millsite Property

The objective for the remediation of OU I is to excavate tailings and other byproduct material and hazardous substances to levels protective of human health and the environment and to dispose of those wastes in the on-site Repository. Five-year reviews will be required to evaluate the protectiveness of the remedy because contamination will be left on-site in the Repository. To implement the remediation, MRAP has established two major project objectives.

- Cleanup levels at the Millsite must be established that are protective of human health and the environment. The ROD established that remediation of concentrations of radium-226 to levels established in Title 40 of the *U.S. Code of Federal Regulations*, Section 192.12 (40 CFR 192.12), can be used as a proxy for other metals contained in the ore and tailings because "... no transport mechanism has been identified that would account for the segregation and dispersal of one of the non-ore elements independently of others (DOE 1990b, page 7)." Recently, limited data have been collected that indicate heavy metals have leached to depths greater than the radium-226 cleanup criteria. Cleanup levels and verification levels for contaminants other than radium-226 are required if DOE is to demonstrate that protection of human health and the environment has been achieved. DOE has proposed to remove contamination to the extent practicable within the capacity limitation of the on-site Repository (which with design changes could be expanded to contain 2.75 million yd³ of contaminated materials) and assess residual levels of contamination. The impact of residual contamination on groundwater quality will be assessed and the need for active groundwater restoration determined.
- Requirements for the cleanup of hazardous substances that are not byproduct material must be defined. Hazardous substances may be encountered on the Millsite that are not byproduct material but do present risk above acceptable levels to human health and the environment. A *Special Waste Management Plan* (DOE 1997c) has been concurred on among DOE, EPA, and the State that defines an approach for identification and characterization of concentrations of nonradiological hazardous substances that may represent unacceptable risk and a strategy for management of this material. DOE is required to remediate hazardous substances that are present in concentrations that present unacceptable risk to human health and the environment.

3.1.2 Operable Unit II—Peripheral Properties

The selected remedy for the remediation of OU II is to excavate tailings and concentrations of other byproduct material and hazardous substances to levels protective of human health and the environment and to temporarily store those wastes on the Millsite until final placement in the on-site Repository.

Although the MMTS ROD (DOE 1990b) states that the wastes removed from the peripheral properties will be placed on existing tailings piles, the *MRAP Phase IIA for OUI, Millsite Pre-Excavation Final Design Report* (DOE 1993b) established an interim Repository south of the East Tailings Pile and east of the Acid Tailings Pile for storage of wastes removed from peripheral and vicinity properties. This design was approved by EPA and the State in 1993. The revision to the selected remedy is not significant (as defined in the NCP) and does not require a ROD amendment or ESD.

Radiological contamination on peripheral properties will be remediated to the standards established in 40 CFR 192.12 unless supplemental standards are applied as described below. Activities for OU II have also entailed remediation of nonradiological hazardous substances that pose unacceptable risk. DOE remediated these properties as required by the *Special Waste Management Plan* (DOE 1997c) as described in Section 3.1.1 and the remedial designs.

For radiological contamination, if the cost of remediation or the adverse effects on the environment are excessive compared to the benefit of remediation, alternative cleanup levels and/or application of supplemental standards may be pursued. Supplemental standards allow for leaving in place contaminated material that is above the standards in 40 CFR 192.12. The following documents were provided to EPA and the State in draft form on November 4, 1996 to support application of supplemental standards.:

- *General Radiological Risk Assessments Method Document*
- *Long-Term Surveillance and Maintenance Plan for Supplemental Standards Locations*
- *Site-Specific Applications for Supplemental Standards*
- *Explanation of Significant Differences for MVP and MMTS Records of Decision*

Comments on these documents were received on December 23, 1996, and January 25, 1997, and responses to these comments have been discussed among DOE, EPA, and the State. A meeting was held on May 8 and 9, 1997, to discuss supplemental standards requirements. A consensus among the agencies was reached on most of the major issues, but not all of the issues were resolved. Currently, discussions are continuing, and final revisions to these documents need to be submitted and concurred upon.

For OU II, the areas under consideration for supplemental standards are piñon/juniper woodlands and steep, sage-covered hillsides where the high cost of remediation and loss of vegetation may not be warranted compared to the risks posed by the level of radiological contamination present. EPA and the State have accepted the use of supplemental standards contingent upon DOE meeting certain conditions and pending the outcome of meeting with the appropriate stakeholders. Implementation of supplemental standards for OU II will require long-term institutional controls on these properties.

3.2 Monticello Vicinity Properties Project

The selected remedy for the remediation of the MVP Site is to excavate tailings and other byproduct material and concentrations of other hazardous substances to levels protective of human health and the environment and to temporarily store those wastes on the Millsite until final placement in the on-site Repository. Although the MVP ROD states that the wastes removed from the vicinity properties will be

placed on the East Tailings Pile, the *MRAP Phase II A for OU I, Millsite Pre-Excavation Final Design Report* (DOE 1993b) established that an Interim Repository (described for OU II) will be used to store wastes removed from vicinity properties. The revision to the selected remedy is not significant (as defined in the NCP) and does not require a ROD amendment or an ESD.

OU D properties contained nonradiological hazardous substances that required remediation. DOE remediated these properties as required by the *Special Waste Management Plan* (DOE 1997c) (see Section 3.1.1) and the remedial designs.

Supplemental standards are also being considered on vicinity properties. DOE has submitted several documents to support the application of supplemental standards (see Section 3.1.2). In addition to one privately owned property and four properties along the Highway 191 embankment, application of supplemental standards is being considered for streets and utilities in the City of Monticello rights-of-way, and U.S. Highways 191 and 666 rights-of-way (see Section 1.1.4, Operable Unit H).

3.3 Monticello Surface- and Ground-Water Remedial Action Project

MSGRAP has two primary objectives. The first objective is to excavate tailings-contaminated soil and sediments in and along Montezuma Creek to reduce risk to human health and the environment and to comply with the ARARs.

The second objective is to determine if following Millsite excavation and implementation of the OU III IRA, contaminated groundwater and surface water continue to pose a future potential unacceptable risk to human health and the environment, if so, then identify a final remedy for controlling any unacceptable risk that complies with the ARARs.

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4.0 Project Tasks

This section presents the major tasks, compliance requirements, document submittals, and cost and schedule information through deletion of the sites from the NPL. This section does not address Long-Term Surveillance and Maintenance, which is discussed in Section 6.0.

Figure 4-1, the Monticello Projects Logic Flow Diagram—Project Overview, shows major activities and interrelationships of activities leading to the deletion of the sites from the NPL. The Project Overview provides the framework to understand more detailed logic networks for OU I and OU III of the MMTS. Logic networks have not been prepared for OU II of MMTS and the MVP Project because the activities on these projects are not complex.

4.1 Monticello Remedial Action Project: Operable Unit I—Millsite Tailings and Millsite Property

OU I consists of three major tasks. The first task, Millsite Remediation, includes those activities necessary for remediation of the Millsite: construction of the Repository; excavate, load, haul the tailings and contaminated material; placement of tailings and contaminated material in the on-site Repository; interim grading of the Millsite; and Repository site restoration. Millsite Remediation is currently in the construction phase.

The second task, Millsite Restoration, includes those activities necessary to restore the Millsite to an acceptable land use. Millsite Restoration is currently in the design phase.

The third task, Operable Unit Completion, addresses those activities necessary to document that cleanup activities were conducted in accordance with the ROD for OU I. This will require preparation of a Remedial Action Report (RAR) for both Millsite Remediation and Millsite Restoration. Upon completion of all required response actions, DOE may propose deletion of OU I from the NPL.

Figure 4-2, the OU I Logic Flow Diagram, shows the interrelationships of these phases of OU I.

4.1.1 Task Descriptions

4.1.1.1 Millsite Remediation

Millsite Remediation Design: The design for Millsite Remediation was completed in 1995. This task involved the preparation of a design for the removal and disposal of tailings from the Millsite to an on-site Repository and preparation of supporting specifications and drawings. The primary focus of the design effort was to achieve compliance with ARARs established in the ROD. Protection of a shallow groundwater system under the Repository site was a primary driver in the development of the design.

The Repository liner system has been designed to be equivalent to the minimum technology requirements established in the Resource Conservation and Recovery Act (RCRA) for containment of hazardous wastes in a landfill. The Repository has been designed with two cells, each of which has a leachate collection and a leak detection system. Leachate drains to collection sumps in each cell and is pumped from the repository to Pond 4 for use for dust control or moisture conditioning in the Repository or for treatment at the WWTP.

The Repository cover has been designed to limit infiltration using a water balance cover and installation of a 60-mil thick high density polyethylene (HDPE) liner. The leakage rate through the cover has been designed to be less than the leakage rate through the bottom liner system. The cover will also control radon emissions from the Repository.

Procurement of Repository and Millsite Remediation Subcontractor: The Millsite Remediation Design, Specifications and Drawings, along with supplemental information, were attached to a Request for Proposal (RFP). The availability of the RFP was advertised in the Commerce Business Daily. Three proposals were received and OHM was selected as the Repository and Millsite Remediation Subcontractor. The subcontract also includes remediation of peripheral property phases MP-00211 Phase II, MP-00181 Phases IB, II, and IV, MP-00179 Phases III and IV, MP-00391 Phase IV, and MP-01042.

The Notice of Award was September 8, 1995. After required submittals were received and accepted by the RAC, the Notice to Proceed was issued October 27, 1995. Repository excavation started November 6, 1995.

Repository Construction: The on-site Repository will be the final disposal site for tailings and contaminated materials removed from the Millsite and tailings contaminated soil from vicinity and peripheral properties. The major steps for Repository construction include excavation, liner installation, tailings placement, cover construction, and site regrading and revegetation.

Repository excavation was completed June 1996 and required the removal of approximately 1.6 million yd³. Material excavated from the Repository has been placed in stockpiles near the excavation. Topsoil, select fill, and random fill have been selectively handled and placed in separate stockpiles. The select fill was used for construction of the soil layer under the liner and will be used for cover construction. The random fill has been used for construction of Repository berms. Topsoil will be used as the final layer on the cover.

The Repository liner system was completed in November 1996. The sand drainage layer of the leachate collection system was completed July 1997. From the bottom to the top, the liner system consists of geosynthetic clay liner, 60 mil HDPE, geonet with heat bonded geotextile, geosynthetic clay liner, 60 mil HDPE, geonet with heat bonded geotextile, and on the bottom of the Repository, a drainage sand layer. The leak detection system (LDS) is composed of the lower liner and geonet and the leachate collection and removal (LCR) system is composed of the upper liner, geonet, and sand drain layer. The bottom of the Repository has been sloped to allow drainage in the LCR system and LDS to two sumps on the north side of the Repository. Piping connects the sumps to the surface and pumps are used to remove water from the sumps to Pond 4.

In the spring of 1997, the amount of leachate collecting in the LDS sumps became a concern and investigations for the source of the leachate were conducted throughout the summer. Dye testing was conducted to determine if there were hydraulic connections between the LCRSs and the LDSs and anchor trenches. Electrical conductivity testing was performed over most of the repository floor to find leaks along with visual inspections. A total of 19 leaks were found and repaired. Inflow into sump 1 of the LDS dropped from 1.3 gallons per day to 0.4 gallons per day and inflow into sump 2 dropped from a maximum of 190 gallons per day to 43 gallons per day by December 1997.

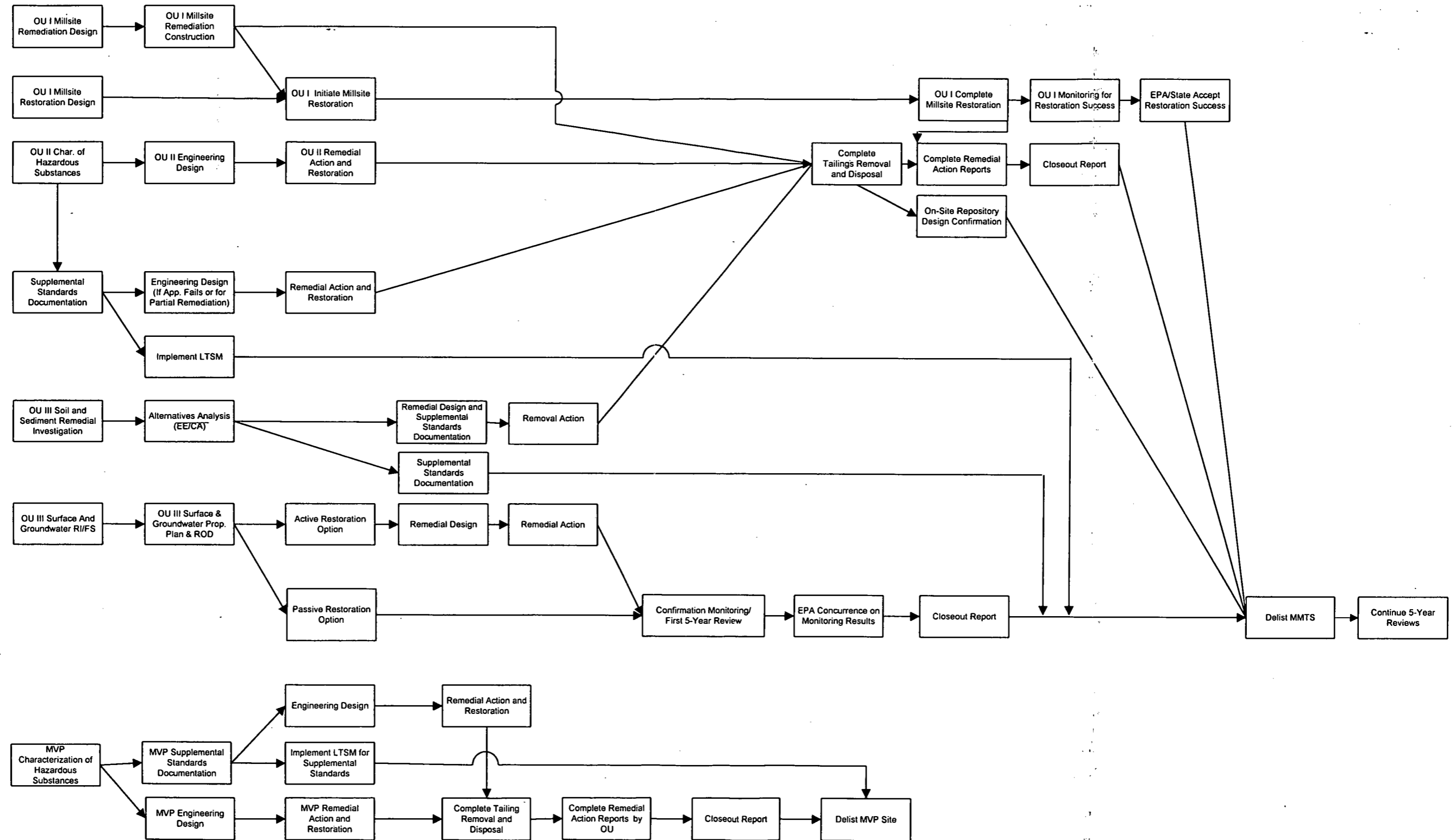
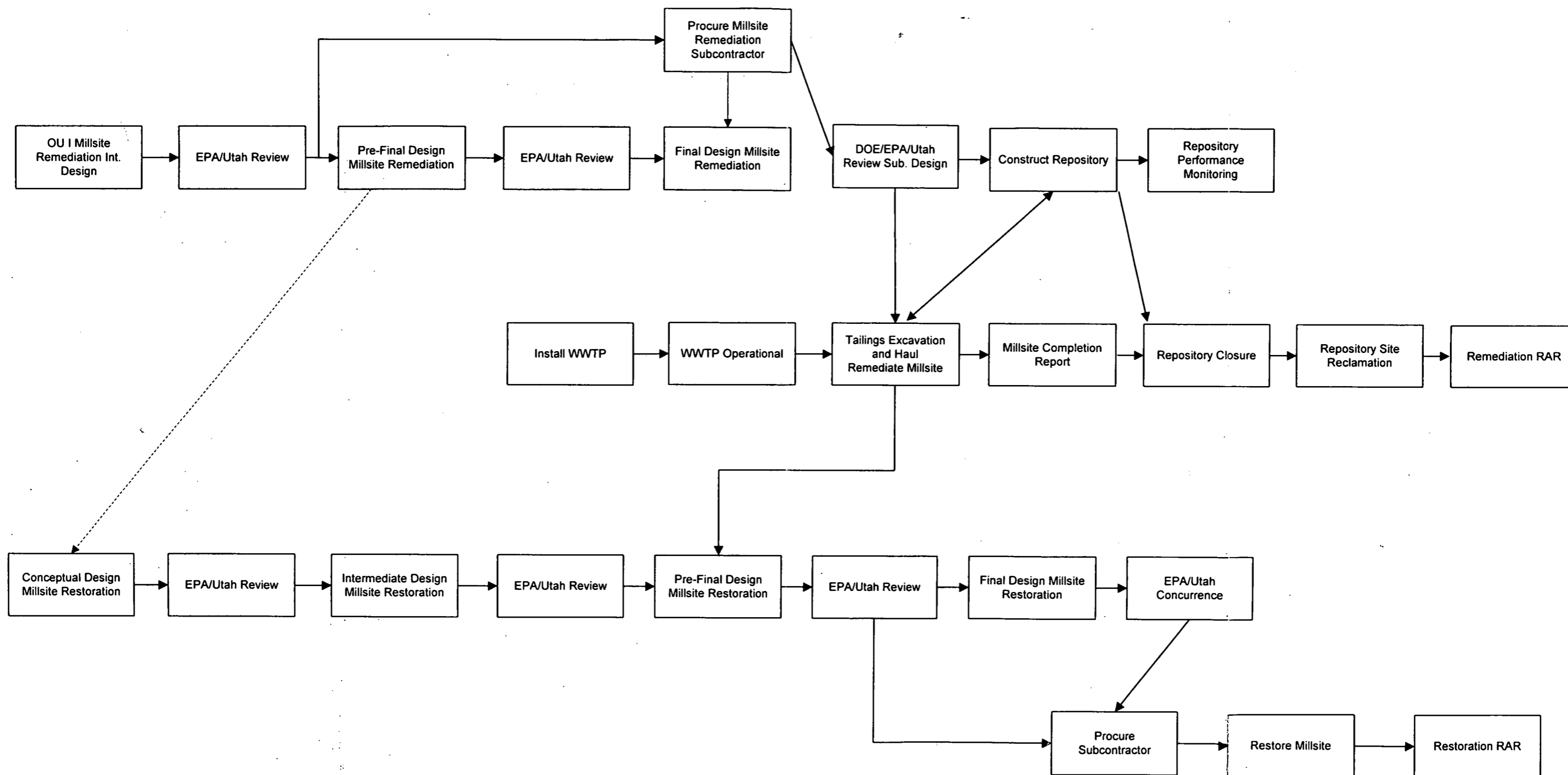


Figure 4-1. Monticello Projects Logic Flow Diagram—Project Overview

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k:\engr\lcpw6\mrpleng-034-0038.03\03991ad\fig4-2.vsd

Figure 4-2. OU I Logic Flow Diagram

During Repository construction, strict construction quality control (QC) and quality assurance (QA) programs have been implemented. The QC program is conducted by the Millsite Remediation Subcontractor, and the QA program is conducted by the RAC through procurement of an independent firm for the liner installation in both the Repository and Pond 4 and the cover. Other QA activities are conducted by the RAC, such as moisture testing in the tailings and particle size distribution in the operations layer adjacent to the liner. QC/QA is critical to ensuring that the Repository is constructed according to specifications so that Repository performance requirements are met.

Pond 4: Pond 4 is located to the east of the Repository. It is designed to collect leachate that drains from the tailings and that is collected in either the leachate collection or leak detection systems. Construction of the pond is complete. The pond has been sized to operate as an evaporation pond with a capacity of 54.34 acre-feet and has a triple liner system to ensure protection of underlying groundwater. Design features of Pond 4 include a HDPE/geosynthetic clay liner (GCL) composite primary liner overlaying a geonet LCR system that is on top of a secondary liner overlaying a geonet, which in turn is on top of a HDPE/GCL composite tertiary liner. The LCR system is designed to collect any leakage passing through the upper-most liner. The LDS should collect any leakage passing through the second liner. A 5 gpm pump pumps fluids collected in the LCR sump back into Pond 4. Automatic controls turn on the LCR pump at a normal high-water operating level in the LCR sump, record the cumulative volume of fluids pumped, record times when fluids are pumped, activate an alarm when the maximum high-water level is reached in the LCR sump, and provide remote status and control capabilities to a local maintenance person who can monitor and correct any operational problems that occur. The most important feature of the system is that, if a problem occurs in the primary liner system that cannot be controlled with the LCR pump, the pond can be pumped dry and the liner repaired.

Pond 4 will remain in use until drainage from the Repository reaches quantities that can be more cost effectively handled by using other methods such as pumping the leachate to a tank for off-site treatment. The pond will then be decommissioned and contaminated materials will be hauled to an offsite disposal facility.

Ancillary Facilities: Construction of the Repository and hauling the tailings has required construction of several ancillary facilities. The Repository access area consists of offices and a parking area that were established on the west end of the Repository site during the 1995 construction season. These facilities provide office space for the DOE Site Engineer and employees of the RAC and Millsite Remediation Subcontractor. Acceleration and deceleration lanes were constructed on Highway 191 to improve traffic flow into and out of the facility. This access is used to bring construction materials onto the Repository site and will be dismantled at the completion of Repository construction.

A haul road, approximately a mile long, has been constructed between the Millsite and the Repository for tailings transport. Decontamination pads were constructed at either end of the road. Control fencing was installed along the perimeter of the road, and drainage from the haul road is controlled by ditches and berms. A decontamination facility has also been constructed at the Repository access area for vehicles accessing Highway 191 from the Repository area. Decontamination is required to control the spread of contamination from trucks exiting the Repository site onto Highway 191.

During construction at the Repository site, runoff is controlled with a series of ditches that direct water to sedimentation basins. A "Stormwater Pollution Prevention Plan" detailing the design, construction and operation of the runoff control system was prepared by the Millsite Remediation Subcontractor and accepted for construction by the RAC. These ditches and basins have been designed to contain the

25-year, 24-hour storm event. The basins and ditches will be removed when no longer needed for erosion control.

Fences have been constructed around the Repository and Pond 4 to keep wildlife from walking on the liners and puncturing them and to restrict unauthorized access to the site. Wildlife gates have been placed in several corners to release animals that may inadvertently enter the area during operations. A deer was trapped in the fenced area in 1996 and was not able to escape through the wildlife gates. As a result, the gates were adjusted to ensure that they performed as required. In 1997, the height of the fence around Pond 4 was increased to 10 ft because deer were able to jump the fence when it was only 8 ft high.

Wastewater Treatment Plant

A transportable WWTP has been set up at the Millsite. The plant was tested according to a plan submitted to EPA and the State in February 1995 and was put into operation in May 1995. The plant treats water from Pond 3, which is fed by a network of ditches on the Millsite to control runoff. Once excavation of the tailings piles starts, water encountered during the excavation will be transported to Pond 3 and subsequently treated. The excavation water is expected to constitute the largest portion of the overall volume that will require treatment. Discharge from the plant must meet the requirements of the UPDES regulations. Discharge from the WWTP in 1995 met the UPDES requirements; however, selenium concentrations were very near the allowable limits. As a result, the plant was modified in 1996 to include an activated alumina treatment process to improve selenium removal to less than the UPDES requirement of 0.012 mg/L. Because the selenium removal process required the use of barium chloride, a sodium sulfate injection system was added to precipitate barium and then a filter system added to remove the barium sulfate. This system was tested in October 1997 and failed because the filter clogged in under 5 hours.

Pilot and laboratory scale testing was conducted in January 1998 to determine if there were any further treatment options available for treating water to meet UPDES effluent limitations. Addition of a clarifier or microfiltration system were evaluated for removal of the barium sulfate, and RO and nanofiltration were tested for use either with the existing plant or as a separate treatment system. A new technology, the use of ZVI was investigated for removal of selenium instead of activated alumina. ZVI does not require the removal of sulfates which is required for the use of activated alumina and therefore does not require the addition of excess barium. Field testing of ZVI will occur in the spring of 1998.

Installation of an RO unit was selected because of reliability and ability of the system to remove contamination to UPDES standards. The brine waste stream generated by the RO will be used for dust control in the Repository, however, if the Repository is too wet, the brine will be put into Pond 4 for subsequent use for dust control in the Repository or treatment at the WWTP. The RO unit can be used by itself, or in series or blended with effluent from Trailers 1 and 2 of the existing WWTP to reduce selenium and TDS concentrations.

Tailings Removal

Millsite tailings are excavated, loaded into haul trucks, and hauled to the on-site Repository. Tailings are not hauled on public roads from the Millsite to the Repository because of public safety concerns and decreased haul efficiency. Dust suppression is required during all aspects of tailings removal. Radon emissions are monitored to ensure that acceptable limits are not exceeded. Monitoring has not indicated any significant increases in radon concentrations beyond the Millsite boundary.

Tailings removal started with the removal of the Carbonate Tailings Pile. The Carbonate Pile was the first layer in the Repository and protects the liner when larger debris is placed in the Repository. Material from the Vanadium Pile and Acid Pile were also used to construct this protective layer. Excavation also occurred on peripheral properties MP-00181 and MP-00211, Vanadium Tailings Pile, East Tailings Pile, and Acid Tailings Pile. Properties MP-00391, MP-00179, and MP-01042 were not disturbed in 1997. Placement of tailings and tailings-contaminated soil is expected to be completed August 31, 1999. This includes the removal of the contaminated surface of the haul road.

A large volume of the tailings are below the groundwater surface. Water from excavations is used for dust control in contaminated areas or transported to Pond 3 for treatment and subsequent release to Montezuma Creek or pumped to Pond 4. The moisture content of the tailings must be managed so that compaction specifications are met in the Repository. Mixing wet tailings with drier tailings is conducted to meet specifications. Tailings that are dry require the addition of water to ensure that optimum moisture conditions are attained to meet compaction requirements.

Removal of tailings is verified in accordance with DOE's *Verification Plan* (DOE 1998c). Peripheral properties are verified using large area verification techniques, the 78-acre tailings area will be verified using the 100 square meter procedure. DOE will conduct independent verification on a portion of the excavation through a contract with a contractor independent of the RAC.

Following tailings removal and verification, the site will be backfilled and graded for erosion control. Backfilling and grading necessary to meet the final design for restoration of the Millsite will be conducted as part of the Millsite restoration phase.

Repository Site Restoration

After the tailings are placed in the Repository, construction of the cover will commence. Over the top of the tailings, the cover consists (from the bottom to the top) of a radon barrier, 60 mil HDPE, sand drainage layer, geotextile, fill, biointrusion layer, fill, and topsoil and gravel admixture in the top 8 in. of soil. The number of layers in the cover decreases over the berms and consists of a bedding/filter layer, covered with topsoil and a gravel admixture or a riprapped slope.

After construction of the cover is completed, reclamation of areas disturbed as a result of construction activities will occur. These activities will include:

- Removal of sedimentation ponds, when no longer needed for erosion control and stormwater pollution prevention;
- Possibly removal of the haul road fill on North Draw, final deposition of the haul road is yet to be determined; (the road could be replaced at a lower elevation, narrowed, and remain in place between the Millsite and Repository. The North Draw fill material could be placed in the Repository cover or used for Millsite backfill);
- Removal of all support facilities such as office areas, decontamination facilities, and staging areas;
- Grading of disturbed areas to ensure that reclaimed land contours blend with adjacent undisturbed land areas;
- Seed bed preparation for areas being reclaimed; and
- Revegetation.

This work will be conducted by the Millsite Remediation Subcontractor as defined in the *Construction Specifications Monticello Remedial Action Project, Operable Unit I, Millsite Remediation* (DOE 1995).

Performance Monitoring

Repository performance will be confirmed by monitoring leachate volume in the primary leachate collection system and by monitoring leachate quantity and quality in the secondary LDS. Criteria for allowable leachate volume and quality have been established as measurements of acceptable Repository performance in the *Contingency Plan* (DOE 1998d). The cover will be inspected to evaluate vegetation growth, erosion, rodent activity, and other characteristics that may indicate compromise of cover integrity.

A detailed explanation of long-term surveillance and maintenance activities is contained in Section 6.0.

4.1.1.2 Millsite Restoration

Minisite Restoration Design

Minisite Restoration Design will present the plans for restoring the Minisite after it has been remediated. Because of its proximity to the City of Monticello, there is substantial interest from the local community on the proposed land use that will be reflected in the restoration design. The focus for community involvement is through the SSAB (See Section 1.1.3 for a discussion on the history of the SSAB and its function). The SSAB has recommended that the former Minisite be transferred to the City of Monticello for use as a park and golf course. The SSAB, City of Monticello, and DOE are investigating land transfer options. DOE-GJO has prepared a conceptual restoration design for both a natural open space and a park that includes a golf course. Intermediate and final designs for restoration of the Minisite will be prepared.

DOE will hold public meetings during the restoration design. DOE will provide EPA and the State with copies of presentation materials 15 calendar days prior to the meetings for review and comment. DOE will continue to hold informal meetings with the public concerning restoration design.

Minisite Restoration Construction

Following the remediation of the entire Minisite and specific peripheral properties, and removal of the Minisite access area, Pond 3 and relocation of the WWTP, Minisite restoration will begin and will include the following activities:

- **Montezuma Creek Realignment and Erosion Control:** During Minisite operation, the alignment of Montezuma Creek was shifted to the south, away from the tailings piles. After the tailings piles are removed, a natural low area will exist near the pre-mill creek alignment, and the creek will tend to reestablish in this alignment. Creek realignment will involve reestablishment of the creek channel to its approximate pre-mill location, but not necessarily reestablishment of all original meanders. Erosion control measures will be implemented to stabilize the channel through the Minisite.
- **Topsoil Placement and Revegetation:** Topsoil will be placed to provide an environment for plantings and seed to root and obtain nutrients. The Minisite area will be seeded.
- **Wetlands:** Wetland areas on the Minisite will be reestablished with plantings and, if necessary, seedlings to restore vegetation.

The scope of these activities will be developed in conjunction with future land-use planning.

4.1.1.3 Operable Unit Completion

After all construction activities are complete, a RAR will be prepared documenting that all of the necessary activities took place and cleanup standards achieved as required by the ROD. An RAR will be prepared for Millsite Remediation and one for Millsite Restoration. Section 4.5.1.6 provides information on the content of an RAR and how it supports the deletion process.

4.1.2 Applicable or Relevant and Appropriate Requirements

Compliance with ARARs established in the ROD is addressed in the design documents. The designs identify each ARAR and specific design requirements or construction procedures to achieve compliance.

The Repository has been designed to be protective of human health and the environment and to meet all ARARs. This is substantiated by leakage rate calculations submitted with the design documents. DOE has shown that the design will achieve compliance with ARARs through performance calculations and will demonstrate performance by monitoring the LCR system and LDS.

The restoration design will address all ARARs as necessary to demonstrate compliance.

Substantial effort has been made to demonstrate compliance with wetlands restoration requirements. A Wetlands Master Plan was prepared which provided an inventory of all wetlands that would or could be impacted by remedial action activities. The Plan also provided specific restoration requirements such as seed mixes and planting requirements that would have to be implemented to restore wetlands. Several acres of wetlands will be restored on the Millsite, to replace wetlands currently present on the Millsite and wetlands that are being replaced on the Millsite rather than their current location on vicinity or peripheral properties.

Several activities have been conducted subsequent to the Millsite Remediation design effort to ensure compliance with ARARs for OU I. These additional activities are listed below.

- A survey was conducted of the areas affected by Millsite Remediation to ensure that there were no threatened, endangered, and sensitive (TES) species requiring special protection. A report summarizing the results of a TES species survey of lands disturbed by Millsite Remediation activities was submitted in July 1995; TES species were not identified.
- An archaeological mitigation effort along the haul road was conducted in accordance with a plan reviewed and approved by the State Historic Preservation Officer. The mitigation plan was submitted May 1995. A report was submitted to the State Historic Preservation Officer summarizing the results of the archaeological mitigation effort in June 1996. Copies of the mitigation plan and results of the mitigation effort were also submitted to EPA and the State.
- During Repository construction, control of fugitive dust emissions is required. In noncontaminated areas, the State opacity standard of 20 percent for fugitive dust must be met. In contaminated areas and during the placement of tailings, specifications require no visible dust emissions.
- Compliance with control of storm water runoff is achieved by implementing the Millsite Remediation Subcontractor's "Storm Water Pollution Prevention Plan." Ditches and sedimentation ponds have been constructed to control storm water runoff.

4.1.3 Document Submittals

The following is a list of major documents that have been or will be submitted for OU I since the ROD was signed in August 1990:

OU I Millsite Remediation Final Design: This design was submitted to EPA and the State in July 1995. It incorporated comments from EPA and the State on the Intermediate and Pre-Final Designs. Performance specifications were also included in the Pre-Final document for all aspects of Millsite remediation and Repository construction. The Pre-Final Design was used to obtain subcontractor bids.

Contingency Plan: A contingency plan has been developed for OU I to address actions that may be taken if the Repository does not perform as planned. The *Contingency Plan* is a stand-alone document that identifies possible failure mechanisms at the Repository and proposed response actions specific to these failure mechanisms. The Plan will eventually be incorporated into the final Site-Wide Long-Term Surveillance and Maintenance Plan (see Section 6.0 for a discussion on the Long-Term Surveillance and Maintenance Plan).

Explanation of Significant Difference (ESD): In March 1995, DOE prepared an ESD for OU I to address the increase in the total project cost. The ESD was made available for public review and comment in April 1995. No comments were received.

Repository Access Area Design: This document was submitted to EPA and the State in April 1995. It addressed access off of Highway 191 and the office facility layout.

OU I RD/RA Work Plan: The OU I RD/RA Work Plan was submitted on April 27, 1995. The Work Plan provided a detailed description of the activities and the schedules presented in the SMP. The schedules in the OU I RD/RA Work Plan are superseded by the schedules presented in this revision of the SMP.

Haul Road Design: The haul road design prepared by the Millsite Remediation Subcontractor was initially transmitted to EPA and the State in April 1996.

Decontamination Pad Design: The decontamination area design has been submitted in three parts by the Repository and Millsite Remediation Subcontractor. These designs were initially transmitted to EPA and the State in June and July 1996. Comments on the designs from EPA and the State were received and incorporated into the revised design and as-built drawings were submitted in July 1997.

Millsite Restoration Design: DOE submitted a Conceptual Design for Millsite Restoration on December 24, 1996. The conceptual design consisted of two site Plans (one each for natural and golf course style restorations), a brief description of design approach, calculations, a sample vegetation specification, and a quantity summary.

An Intermediate Millsite Restoration Design will be submitted as a secondary document for EPA and State review. The content of the Intermediate Design is described in Appendix B. The Intermediate Design will contain all of the components listed in Appendix B.

Comments on the Intermediate Design will be incorporated into a Pre-Final Design that will be submitted as a primary document to EPA and the State for review. Comments from the Pre-Final Design will be incorporated into the Final Design. The preceding description may change depending on future land use decisions and City involvement in the restoration project design effort.

Completion Report: A completion report will be prepared for the Millsite. This report is expected to be similar in content to the reports prepared for vicinity and peripheral properties (see Section 4.2.1 for a description of these reports). Verification data will be provided for radiological contaminants remediated. Concentrations of nonradiological contaminants left in place will also be reported in the completion report.

Remedial Action Report: This report documents specific remedial action activities that occurred under each OU at a site. The report provides documentation that a particular OU has met its objectives and summarizes information for subsequent inclusion in the Superfund Site Close-Out Report. See Section 4.5.1.6 for additional information on the content of an RAR and deletion of the MMTS from the NPL.

4.1.4 Schedule and Funding

DOE's goal as reflected in the schedule provided on Plate 1 is to complete Millsite remediation and restoration by July 17, 2001. To attain this goal, DOE began cell excavation November 1995 and lining of the cell began in June 1996. Tailings placement began on June 5, 1997, and will continue through the 1998 and 1999 construction season. Cover construction, including Repository restoration, is scheduled to be started in 1999 and completed in 2000. Millsite restoration will begin in 2000, and is expected to be complete July 17, 2001.

The costs for the Monticello Projects are shown in Appendix C. These costs reflect definitive estimates to rough order-of-magnitude estimates and may change as the construction proceeds and designs are finalized. The funding levels shown in Appendix C are expected to meet project requirements.

4.2 Monticello Remedial Action Project: Operable Unit II—Peripheral Properties

OU II consists of several tasks which include characterization of contamination, remedial action design, procurement and construction, verification, completion report preparation, and finally preparation of an RAR. Characterization prior to preparation of a remedial design is completed. Design work is completed except on one property and those properties where supplemental standards are being considered. Construction is complete on 14 of the 29 properties.

4.2.1 Task Descriptions

Investigation and Remediation of Hazardous Substances Other Than Radium-226

Investigations have been conducted to evaluate the presence of concentrations of hazardous substances other than radium-226 that may pose unacceptable risk and may require remediation or special handling as a hazardous waste. For the peripheral properties, these investigations were conducted on the BLM Compound (MP-00181 Phase I), on MP-00181 Phase IVA/MP-00211 Phase II where the Millsite analytical lab was located and fuel spills were identified, and on MP-00990 where waste oils were spilled along with other potential contaminants. Nonradiological substances released to the environment requiring remediation beyond the extent of radiological contamination have not been identified on MP-00181 or MP-00211. Although nonradiological hazardous substances have been identified on MP-00990, EPA and the State agreed (EPA 1996) to allow DOE to limit remediation to only commingled and radiological contamination. In part the decision was made because of the ongoing operations on this privately owned property.

During remedial action, nonradiological suspect hazardous substances may be encountered that may require remediation. If these substances are encountered, the requirements of the *Special Waste Management Plan* (DOE 1997c) will be followed for 1) characterization, 2) determination if cleanup is necessary, and 3) waste management. Concurrence from EPA and the State is required regarding the need for remediation and waste management requirements.

Nonradiological hazardous substances that meet the Repository waste acceptance criteria will be placed in the on-site Repository with EPA and State approval. Hazardous substances that cannot be disposed of in the on-site Repository will be shipped to off-site, permitted commercial treatment, storage and disposal facilities that meet the CERCLA off-site response requirements of the NCP.

DOE's responsibilities for remediation of nonradiological hazardous substances are fulfilled when the nonradiological contamination identified in approved work plans is removed and verification samples show contamination below cleanup standards (State of Utah 1997). During remediation, DOE will implement the *Special Waste Management Plan* as required and provide verification data demonstrating that contamination was removed to cleanup standards. DOE will not be responsible for ongoing or future releases on these properties not identified in approved work plans or recorded as required by the *Special Waste Management Plan*. If radiological contamination for which DOE is responsible (discovered in the future on any property) becomes mixed with hazardous waste by any mechanism, DOE is responsible for the resultant mixed waste.

Remedial Action Design

Engineering staff prepare a design document by using the information in a Radiological Assessment (Appendix A to the design) as well as the Site Assessment Report or the Site Characterization Report for properties where hazardous substances other than radium-226 are suspected to be present for included properties. The designs are developed to demonstrate that compliance of ARARs is achieved. The designs are submitted to EPA and the State for review. Concurrence is provided by the State.

Remedial Action Agreement

The property owner must accept the Remedial Action Design by reviewing, negotiating and subsequently approving the design by signing a Remedial Action Agreement (RAA). Prior to presenting the RAA with the attached design to the property owner, the DOE-GJO contracting officer reviews and approves the RAA following regulatory approval of the Remedial Action Design.

Procurement and Construction

A bid package is prepared and an invitation to bid is issued on the basis of the approved Remedial Action Design and the RAA. A technical evaluation is conducted for each bid; a subcontract is awarded on the basis of cost and responsiveness; the Notice of Award is issued to the successful bidder; and a request for submittals is issued by DOE. All submittals are reviewed by DOE for technical responsiveness. The successful bidder is issued a Notice to Proceed following the technical review and acceptance of the submittals by DOE. Remediation of the property is conducted in accordance with the Remedial Action Design. Construction oversight is conducted by DOE's RAC and the DOE Site Engineer and OU II Project Manager.

Verification and Measurement of Radon Daughter Concentrations

After removal of contamination, the excavation is verified using the 100-square-meter procedure or the large-area-verification procedure to demonstrate that remediation to applicable standards for

contamination in soil was achieved. Currently, Track Etch cups are placed in all habitable structures following completion of remedial action to determine if internal radon concentration meets the applicable indoor standard established by EPA. Results of radon measurements are subsequently included in the property completion report.

A report entitled "Prompt Alpha-Track Study for Monticello, Utah, Vicinity and Peripheral Properties" was submitted to EPA and the State in March 1995. On the basis of the data presented in this report, EPA and the State concurred on the use of a 3-month measurement in either the spring or fall as representative of a 1-year measurement. Implementation of the prompt measurements has significantly reduced the amount of time required to determine the adequacy of remediation.

Completion Reports, Independent Verification, and Preparation of the RAR

The verification map, notice of final inspection, and radon daughter concentration (RDC) results are used to prepare a completion report for each property. A portion of the completion reports are submitted to the independent verification contractor (IVC) for review. The IVC reviews completion reports, conducts field visits, samples 10 percent of the completed properties, and recommends approval or disapproval of completion reports to DOE. DOE reviews the IVC's recommendation for approval of completion reports, prepares an RAR to certify that construction is completed on all the properties within the OU. See Section 4.5.1.6 for information on the preparation and approval of the RAR and the deletion process. If feasible, DOE will consider deletion of OU II from the NPL separately from the entire site.

4.2.2 Applicable or Relevant and Appropriate Requirements

The design documents demonstrate compliance with ARARs established in the ROD. Each ARAR is identified and specific design requirements or construction procedures that demonstrate compliance with the ARAR are identified.

In some instances, additional actions may be required during construction when differing site conditions are encountered or new information is obtained. Examples of actions that have been taken are described below:

- Swallows were noticed nesting on the U.S. Bureau of Land Management (BLM) Compound during remedial action in 1995. DOE worked with the U.S. Fish and Wildlife Service and the State of Utah Division of Wildlife Resources to ensure that compliance with the Migratory Bird Act was attained. Demolition activities were rescheduled so that the nestlings could fledge before the nests were removed. No adverse impacts on the bird population occurred as a result.
- The Southwestern Willow Flycatcher was identified as an endangered species when the list of TES species was reviewed. Some areas scheduled for remediation contain willow stands that are suitable nesting sites for this species. As a result, remediation of willow stands greater than a specified area were rescheduled for remediation after August 15, 1996, when the nesting season was over. In the spring of 1997, willows were removed from the Millsite prior to the start of the nesting season so that construction could proceed as scheduled.
- Asbestos was discovered on the Millsite in the mill building area. An *Asbestos Management Plan* (DOE 1997a) was prepared addressing how the material would be managed for disposal in the on-site repository. The *Asbestos Management Plan* was submitted to the State of Utah, Department

of Environmental Quality, Division of Air Quality for review and concurrence. Removal and disposal of asbestos will proceed in accordance with this plan.

4.2.3 Documents

OU II RD/RA Work Plan: This Work Plan was submitted to EPA and the State on March 22, 1995. Additional scheduling details, beyond those presented in the December 1995 version of the SMP, were addressed in the Work Plan for design and construction. The schedules submitted in the Work Plan are now superseded by the schedules presented in this July 1998 version of the SMP. Revision of the Work Plan is not proposed.

Site Assessment Reports (for nonradiological hazardous substances): This report documents the first phase of property characterization for nonradiological hazardous substances. This phase of characterization consists of visual inspection of the property, interviews with current and past property owners, and may include limited sample collection. The Site Assessment Report may recommend no further action, preparation of a Sampling and Analysis Plan (SAP), if necessary, to determine appropriate remedial action, or remedial action if the area(s) of concern are limited in extent. Site Assessment Reports are submitted to EPA and the State for review and are included in the remedial design for the property for approval.

Sampling and Analysis Plans (SAP) (for nonradiological hazardous substances): The SAP establishes the plan for further site characterization that may be accomplished in phases. Initially, a screening phase may be proposed to take biased samples in "worst case" locations to determine if hazardous substances exceeding risk-based cleanup standards are present. A second phase would establish the extent of the contamination requiring remediation. The SAP includes sampling rationale, locations, analytical requirements, and methods, and QA/QC requirements.

Site Characterization Reports (SCR) (for nonradiological hazardous substances): The results of the characterization effort, as specified in the SAP, are summarized in the SCR. The SCR also provides recommendations for remediation or waste management requirements. SCRs are submitted to EPA and the State for review and are included in the remedial design for the property for approval.

Remedial Action Designs: Designs are submitted to EPA and the State on a periodic basis.

Remedial Action Agreements: These are internal DOE documents establishing a contractual relationship between the property owner and DOE during remedial action.

Completion Reports: Completion Reports document that each included property has been remediated to acceptable standards. For radium-226, the standards are established in 40 CFR 192. Cleanup of other hazardous substances of concern is to risk-based standards.

Remedial Action Report: This report documents specific remedial action activities that occurred under each OU at a site. The report provides documentation that a particular OU has met its objectives and summarizes information for subsequent inclusion in the Superfund Site Close-Out Report. See Section 4.5.1.6 for additional information on the RAR and deletion of the site from the NPL.

4.2.4 Schedule and Funding

Remediation of the peripheral properties is scheduled so that contamination removed from the properties can be placed in the on-site Repository. To meet the working schedule for Repository closure, all tailings must be removed from the peripheral properties before the Millsite Remediation Subcontractor completes remediation of the Millsite and Millsite peripheral properties which is expected in August 1999. If remedial action extends beyond the August 1999 date due to unforeseen events, then DOE will evaluate options for off-site disposal versus keeping the Repository open longer. The last peripheral properties to be completed are those that will be remediated along with the Millsite. These include portions of MP-00179 and MP-01042.

Funding for OU II is included in the funding numbers shown for MRAP in Appendix C.

4.3 Monticello Vicinity Properties Project

4.3.1 Tasks Descriptions

The same tasks described for OU II are applicable to the vicinity properties, with the following modification and additions:

Inclusion Surveys

This activity includes performing land surveys, gamma scans, and measurement of RDCs to determine if a property has radium-226 contamination in excess of EPA cleanup standards. A radiological contamination map and an inclusion or exclusion recommendation are prepared. Inclusion surveys are completed.

Investigation and Remediation of Nonradiological Hazardous Substances

Investigations have been conducted to evaluate the presence of concentrations of hazardous substances other than radium-226 that may pose unacceptable risk and may require remediation or special handling as a hazardous waste. For the vicinity properties, these investigations were conducted on MS-00111, MS-00112, MS-00685, MS-00910, and MS-00959. MS-00688 is tracked and remedial action has been designed with MS-00685 because of ownership and is therefore included in OU D. However, there are no suspect areas of contamination on the property.

Nonradiological substances released to the environment requiring remediation were identified on MS-00111, MS-00112, and MS-00959; remediation is complete on these properties. Although nonradiological hazardous substances were identified on MS-00685, EPA and the State agreed (EPA 1996) to allow DOE to limit remediation to only commingled and radiological contamination. In part, the decision was made because of the ongoing operations on this privately owned property. Remediation of MS-00685 is complete.

Defining the Site Boundary

DOE submitted a proposal for defining the site boundary in March 1995. The proposal was based on EPA and State recommendations to continue examining properties within an 8-mi radius of the Millsite. DOE's efforts to locate additional mill related materials included:

- a mailing to all owners of property within the 8-mi radius,
- an announcement on radio station KUTA, Blanding, Utah,
- advertisements in local newspapers and notices in Salt Lake City newspapers,
- interviews with ore shippers and relatives, and
- talks with senior citizens and civic/community groups.

DOE notified property owners that inclusion surveys would be conducted at no cost to owners who believe their property may contain tailings or other materials from the Monticello Millsite. DOE also surveyed properties beyond the 8-mi radius when reliable evidence indicated that Monticello Millsite materials were present. Because it is in the public and DOE's best interest to identify properties with Monticello Millsite materials as quickly as possible, DOE gave the benefit of the doubt to information sources and performed inclusion surveys even when information was somewhat sketchy. The inclusion criteria were based solely on radiological contamination and not on the presence of nonradiological hazardous substances. The public was notified that the last day to request a survey was April 30, 1996. To date, 20 properties within the 8-mi boundary have been surveyed and six (6) properties included in OU G of the MVP Site.

4.3.2 Applicable or Relevant and Appropriate Requirements

Designs demonstrate compliance with ARARs established in the ROD. Specific design requirements or construction procedures have been established to achieve compliance with ARARs.

The primary ARAR establishing cleanup standards for remediation of the MVP Site is 40 CFR 192. Section 192.12 of this relevant and appropriate requirement establishes limits on gamma radiation levels and annual average RDC in habitable structures. It also establishes cleanup levels for radium in soil on open lands. Gamma levels shall not exceed the background level by more than 20 microroentgens per hour, RDC levels shall not exceed 0.03 WL and the residual radium-226 concentration in soil shall not exceed 5 pCi/g in the first 6 in. of soil or 15 pCi/g in soils below 6 in. averaged over 100 square meters.

Supplemental standards are also described in 40 CFR 192. Based on the eligibility requirements stated in 40 CFR 192.21, standards other than those established in 40 CFR 192.12 may be applied for. DOE is applying for supplemental standards based on the criteria of excessive environmental damage and cost, in addition to owner requests.

4.3.3 Document Submittals

The following documents are prepared for work on the MVP Site. These documents are described in Section 4.2.3 except for the Inclusion/Exclusion letter which is described below.

- Inclusion/Exclusion Letter
- Site Assessments
- Sampling and Analysis Plans
- Radiological and Engineering Assessment (same as Remedial Action Design)

- Supplemental Standards Applications
- Remedial Action Agreements
- Completion Reports
- Remedial Action Reports (one report per OU)

Additional requirements for deletion of the MVP Site from the NPL are described in Section 4.5.1.6.

Inclusion/Exclusion Letter: After reviewing information from inclusion surveys, DOE provides a recommendation to EPA and the State to either include a property into the Site or exclude it as required by Section XIII of the FFA.

4.3.4 Schedule and Funding

DOE's working schedule for construction on the vicinity properties, OUs A through H, is to complete remediation by May 15, 1999, to meet the MVP 2000 Deletion Schedule. The working schedule is DOE's goal; however, if necessary because of unforeseen problems, DOE may continue to remove tailings until Repository closure as described in Section 4.2.4.

By December 30, 1998, DOE expects to complete construction on 423 properties (some of these properties required no action and this number does not include the supplemental standards properties). The total number of included vicinity properties as of March 1998, is 420. Appendix A lists all of the included properties and the date that they were included.

RDC measurements over 0.03 WL may result in additional remedial action that is currently not funded, but could be accommodated in the working schedule for MMTS OU I. Appendix D contains the DOE Action Plan that will be implemented for properties that exceed 0.03 WL upon completion of initial remediation activities.

DOE funding for the MVP Project is shown in Appendix C. The funding levels include a management reserve for unforeseen cost growth. These costs reflect completion of remedial action according to the DOE working schedule rather than the "not-later-than" schedule presented in the SMP.

4.4 Monticello Surface- and Ground-Water Remedial Action Project

The two major activities of MSGRAP are selection and implementation of appropriate risk-based response actions addressing contaminated soils and sediments in Montezuma Creek Canyon and groundwater and surface-water contamination. The following sections describe the tasks that will be performed to reach selection of an appropriate remedy. Figure 4-3, the OU III Logic Flow Diagram, shows the relationships of the tasks described below.

A draft-final AA (DOE 1998a) has been prepared to evaluate potential remedies for soil and sediment. Alternatives include removal actions (i.e., excavation of contaminated soil and sediment) as well as remedies that apply supplemental standards. The AA satisfies the requirements of an EE/CA for non-time-critical removal action. It contains all the required elements of an EE/CA but evaluates the alternatives based on the nine CERCLA evaluation criteria (as done with a feasibility study) instead of the three criteria typically used in an EE/CA.

DOE has received initial regulatory concurrence on the AA and recommended response actions for Upper, Middle, and Lower Montezuma Creek. Following the public comment period on the AA and the

recommended response action (a removal action requiring excavation of contaminated soil and sediment for Upper and Lower Montezuma Creek and application of supplemental standards in Middle Montezuma Creek) the recommended response action will be selected or modified. Removal actions will be documented in an Action Memorandum followed by implementation of a non-time-critical removal action. Ultimately, the selected response action will be documented in the OU III ROD.

4.4.1 Task Descriptions

4.4.1.1 Field Characterization

Characterization of the nature and extent of contamination in groundwater and surface water and contaminated soil and sediment along Montezuma Creek is required to determine if the contamination presents an unacceptable risk to human health and the environment. An OU III RI Work Plan was prepared by DOE proposing the characterization activities required to determine the nature and extent of contamination. EPA and State concurrence on the RI Work Plan has not been obtained; however, DOE proceeded with the characterization activities at risk. Characterization activities have included assessing concentrations of contaminants of concern in sediments, soils, surface water, groundwater, and biota. Previous studies indicate a sixth media, air, is not a significant pathway.

Because of the unknown effects of Millsite excavation on surface water and groundwater contamination, an IRA has been proposed. Additional characterization activities of these media will be performed during the IRA (Section 4.4.1.9).

4.4.1.2 Prepare Risk Assessments

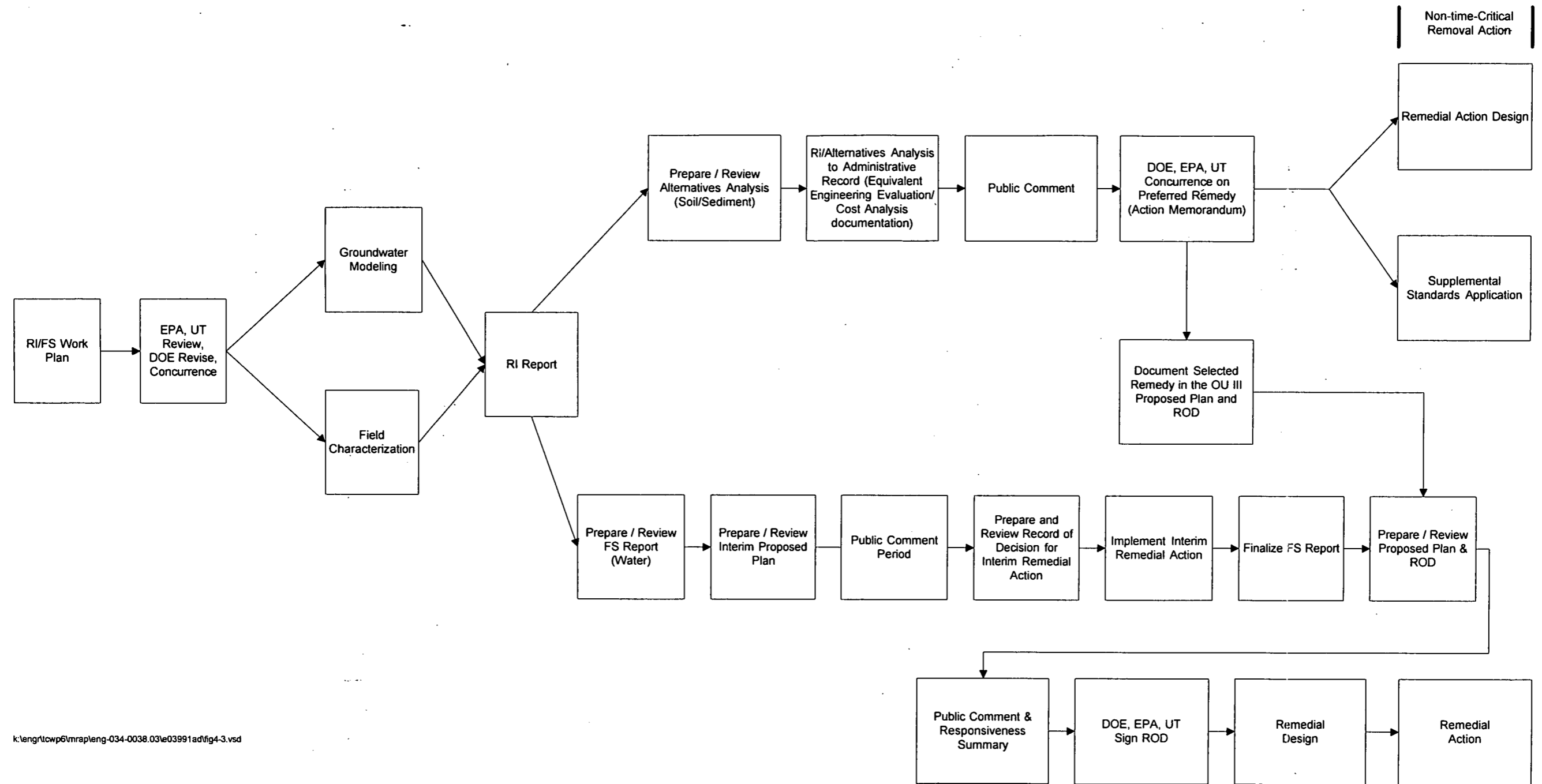
A Human Health Risk Assessment and Ecological Risk Assessment have been prepared to evaluate the risk to human health and the environment from contamination in groundwater, surface water, soil, sediment and biota. The human health risk assessment is based on land-use scenarios concurred on among DOE, EPA, and the State in various meetings. The risk assessments have been submitted as a secondary documents and were revised and submitted with the draft-final RI report.

4.4.1.3 Prepare Remedial Investigation Report

The draft-final RI report (DOE 1998b) has been prepared to document the results of the site characterization and risk assessments in accordance with established EPA guidelines. The RI report discusses the nature and extent of contamination, contaminant fate and transport and incorporates the human health and ecological Baseline Risk Assessment (BLRA) report. An ARARs evaluation is identified in an appendix to the RI report.

4.4.1.4 Prepare Alternatives Analysis for Soil and Sediment

A detailed Alternatives Analysis was performed to assess potential remedies for mitigation of any unacceptable risks identified in the BLRA. The alternatives evaluated for various segments of Montezuma Creek, are (1) no action, (2) institutional controls, including land purchase by DOE, (3) partial remediation of areas of elevated gamma readings, (4) remediation to standards in 40 CFR 192.12 over selected areas, and (5) remediation to the standards in 40 CFR 192.12 along the entire creek. The draft-final AA analyzed each alternative on the basis of meeting the two threshold criteria and the five balancing criteria or CERCLA criteria. Following the public comment period, the draft-final AA will be revised on the basis of the two modifying CERCLA criteria, State and community



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Figure 4-3. OU III Logic Flow Diagram

acceptance. DOE will prepare supplemental standards applications for EPA and State concurrence for properties where it is proposed that contamination above standards in 40 CFR 192.12 be left in place.

The AA meets the requirements of an EE/CA for non-time-critical removal actions and will be used to document the evaluation of removal actions considered as remedies for Upper, Middle, and Lower Montezuma Creek.

4.4.1.5 Selection of the Preferred Remedy for Remediation of Soil and Sediment

DOE will prepare a Fact Sheet summarizing the AA and describing the recommended remedy and will provide the fact sheet for public comment. The AA will be placed in the Administrative Record for public review during the comment period. A public meeting will also be held to discuss the preferred remedy and obtain input from the public. The AA will be modified as appropriate to incorporate public comment. Once concurrence is reached among the DOE, EPA, and the State on the preferred remedy, an Action Memorandum will be prepared if the preferred remedy is a removal action, and then a non-time-critical removal action will be implemented. The preferred remedy also will be documented in the Proposed Plan and ROD.

4.4.1.6 Remedial Action Design and Preparation of Supplemental Standards Applications for Soil and Sediment

If a removal action is selected for cleanup of contaminated soil and sediment along Montezuma Creek, DOE will prepare the removal action design documents for Upper, Middle, and Lower Montezuma Creek, as appropriate. If contamination will remain on the properties above standards described in 40 CFR 192.12, then Supplemental Standards Applications will be prepared as required by 40 CFR 192.22. DOE proposes that the content of the Supplemental Standards Applications is a brief summary of the information contained in the RI (including the risk assessments) and the Alternatives Analysis along with any other information that may be required for a supplemental standards application.

4.4.1.7 Implementation of Removal Action for Soil and Sediment

Implementation of the selected remedy will follow the same process as described in Sections 4.2.1 Remedial Action Agreement, Procurement and Construction, Verification, and Completion Reports and Independent Verification.

4.4.1.8 Conduct Feasibility Study (pre- and post-IRA) and Prepare Feasibility Study Report (pre- and post-IRA) for Surface Water and Groundwater

During the pre-IRA FS, results of the RI were used to develop remedial action objectives and remedial action alternatives, and to support initial screening and detailed analysis of the alternatives for surface water and groundwater in accordance with established EPA guidelines. Numerical modeling results were used, in part, to evaluate alternatives for active and passive restoration.

The post-IRA FS will document the results of the IRA and use these results to refine remedial action objectives and alternatives and to revise the detailed analysis of alternatives that was presented in the pre-IRA FS. The post-IRA FS will be conducted to ensure that appropriate remedial alternatives for surface water and groundwater are evaluated so that relevant information concerning the remedial action options can be presented to the decision makers and an appropriate final remedy selected. Results of the post-IRA FS will be reported in a post-IRA FS report.

4.4.1.9 Prepare Interim Proposed Plan and Interim ROD

An interim Proposed Plan will be prepared to obtain input from the public on the proposed IRA. The selected IRA will be documented in the interim ROD.

4.4.1.10 Implement Interim Remedial Action

An IRA will be implemented to prevent exposure and control risks from groundwater, to prevent further degradation of water quality, and to achieve significant risk reduction quickly. The IRA will be implemented during Millsite excavation and continue for a minimum of 4 years after restoration of the Millsite is complete and until a long-term solution is finalized in the ROD.

4.4.1.11 Prepare Proposed Plan and ROD (Final Remedy)

Determination of a remedy for surface-water and groundwater contamination will be based on the evaluation of alternatives done in the FS. A Proposed Plan and ROD will be prepared and submitted to EPA and the State. These will be made available for public review and comment. The Proposed Plan and ROD will establish performance goals for acceptable water quality and the time period within which these criteria must be met. Estimates on the time required for surface water and groundwater cleanup that are based on numerical modeling projections will be confirmed by field monitoring.

The preferred remedy for remediation of the soil and sediments will be documented in the Proposed Plan and the selected remedy will be documented in the ROD.

4.4.1.12 Prepare Remedial Design/Remedial Action Work Plan

If the selected remedy for OU III surface water and groundwater is an active technology, an RD/RA Work Plan for the design and remedial action for restoration will be prepared to document the process that will be followed and the schedule for implementation. The content of the RD/RA Work Plan will follow available EPA guidance.

4.4.1.13 Remedial Action Design

A remedial action design will be prepared if the selected remedy for restoration of groundwater and surface water is an active technology. DOE must prepare at least a conceptual and pre-final design, the content of these designs will follow the descriptions in Appendix B. As part of preparing the RD/RA Work Plan, DOE will provide a specific plan for implementing design.

4.4.1.14 Procurement and Construction

This will be implemented similar to the process described in Section 4.2.1, if required. The RD/RA Work Plan will provide specific details for implementing construction.

4.4.1.15 Operation and Maintenance

If the selected remedy for OU III involves operation and maintenance of a WWTP developed for restoration of groundwater and surface water, a plan for operation and maintenance will be developed. Development of an Operation and Maintenance Manual may also be required. Once a remedy is selected, the DOE will address the requirements for operation and maintenance in the RD/RA Work Plan.

4.4.1.16 Interim Remedial Action Report

Assuming that a Long-Term Response Action (LTRA) has been implemented for restoration of groundwater and surface water, or verification monitoring, an interim RAR will be prepared (EPA 1995). The interim RAR will also address the remediation of soil and sediment contamination in OU III if remediation of the properties is conducted through a non-time critical removal action. See section 4.5.1.6 for the content of an RAR and additional information on deletion of a site from the NPL.

4.4.2 Applicable or Relevant and Appropriate Requirements

The RI/FS Work Plan (DOE 1995) presented a preliminary evaluation of ARARs for OU III. The Alternatives Analysis of Soil and Sediment (DOE 1998) evaluated compliance of each alternative with the ARARs. The FS will evaluate compliance of each alternative for surface water and groundwater with ARARs. The OU III ROD will establish the ARARs for OU III. The final ARARs for OU III will be established when the final remedy (ROD) is selected.

4.4.3 Documents

The draft final OU III RI/FS Work Plan, Field Sampling Plan, and Quality Assurance Project Plan (QAPjP) were submitted to EPA and the State in September 1995; EPA and State concurrence has not been received on these documents. The following documents have been or will be prepared for OU III and were described in Section 4.4.1.

- *Human Health and Ecological Risk Assessments*. Secondary documents.
- *Remedial Investigation Report*. Primary document.
- *Alternatives Analysis* for Soil and Sediment. Primary document.
- *Feasibility Study Report* (post-IRA) for surface water and groundwater. Primary document.
- *Remedial Design* documents for soil and sediment. Primary document.
- *Supplemental Standards* document for soil and sediment. Primary document.
- *Action Memorandum* for Soil and Sediment. Primary Document.
- *Interim Proposed Plan* for surface water and groundwater Primary document.
- *Interim ROD* for surface water and groundwater. Primary document.
- *Proposed Plan* for surface water and groundwater. Primary document which will also incorporate the remedy selected for the soil and sediment removal action.
- *ROD* for surface water and groundwater. Primary document which will also incorporate the remedy selected for the soil and sediment removal action.
- *RD/RA Work Plan* for surface water and groundwater. Primary Document.
- *Remedial Design* for surface water and groundwater. Primary Document.
- *Interim RAR* for OU III. Primary Document.

4.4.4 Schedule and Funding

Remediation of soil and sediments through implementation of a non-time critical removal action will be accomplished in 1998; some restoration activities may fall into 1999. The following OU III activities tie directly to the OU I schedule:

- Removal of contamination from Montezuma Creek Canyon must be completed before closure of the permanent Repository, to avoid additional costs for off-site disposal. Closure of the Repository may be delayed if this is a more cost effective approach for disposal compared to off-site disposal.

- The extent of residual soil contamination at the Millsite must be characterized to understand its potential to be a continued source of groundwater contamination. Surface water and groundwater concentrations must be monitored a minimum of 4 years following restoration of the Millsite to verify that contaminant concentrations are obtaining acceptable levels.

The funding for completion of this project is shown in Appendix C.

FY 1998 funding is adequate for the scheduled activities. Funding has already been requested for FY 1999 which, if fully appropriated, will be adequate to fund the scheduled activities. DOE is currently developing budget requests for FY 2000 and will be developing budget requests for the out years, which, if fully appropriated, will be adequate to fund the scheduled activities.

4.5 Monticello Projects Tasks

Several activities pertain to both MMTS and the MVP Site or several of the OUs. These activities are discussed below along with the documents that have been prepared in support of the activities.

4.5.1 Task Descriptions

4.5.1.1 Community Relations Program

The purpose of the community relations program for the combined MMTS and the MVP Site is to encourage public involvement in environmental restoration decision-making. The goal is to provide understandable, accurate, and timely information to interested parties during environmental cleanup activities. The program establishes a two-way communication between DOE and stakeholders and maximizes opportunities for public involvement. To support this communication, DOE has a full-time Site Engineer assigned to Monticello and the RAC has a full-time community relations person and owner relations person. There are also several DOE and RAC support staff at the GJO that support community relations activities.

An SSAB has also been established to provide public input into the DOE decision-making process. As discussed in Section 1.1.3, the SSAB was initially established to support the alternatives analysis for OU I. Currently the SSAB provides input to DOE on such issues as land-use options for the restored Millsite and preference for hiring local residents and providing training for those people. Technical presentations are made to the SSAB on Monticello Project activities to solicit concerns that the Board members and therefore the local community may have.

All community relations activities are conducted in accordance with the following Federal environmental laws and DOE and EPA guidance.

- 1990 NCP section 300.415, section 300.425, section 300.430, section 300.435, section 300.815.
- CERCLA Sections 113; 117(a), (b), (c), (d), (e); 122 (d).
- U.S. Environmental Protection Agency, *Community Relations in Superfund: A Handbook*, January 1992.
- U.S. Department of Energy, *Public Participation in Environmental Restoration Activities Environmental Guidance*, November 1991.

- *Interim Report of the Federal Facilities Environmental Restoration Dialogue Committee, Recommendations for Improving the Federal Facilities Environmental Restoration and Decision-Making and Priority-Setting Processes*, February 1993.
- U.S. Department of Energy, *Guidance on Implementation of the Department's Public Participation Policy*, July 1994.

The Community Relations Plan (CRP) describes the activities that will be implemented to keep the community informed and involved in the project. Periodically, fact sheets are released describing current activities along with monthly news releases. Briefings are held for local officials and key business groups. Public meetings or public availability sessions are held on an as-required basis. Display advertisements are prepared to announce public meetings or applicable public comment periods on documents. The master mailing list is updated once every other month and as information changes.

A 30-day public comment period on DOE's recommended removal action for contaminated soils and sediments in OU III and the OU III proposed IRA began on March 27, 1998, and ended on April 27, 1998.

DOE and RAC staff participate in community activities such as the San Juan County Fair and Pioneer Days, support local educational programs by providing speakers for classroom presentations and community organizations. DOE has also established a toll free telephone number that connect Utah residents directly with DOE in Grand Junction, Colorado.

4.5.1.2 Health and Safety Program

Occupational safety is a paramount concern for activities on the Monticello Projects. Health and Safety staff prepare Health and Safety Plans (HASPs), Radiation Work Permits, and Safe Work Permits. Requirements for training, medical monitoring, site access, and personnel protective equipment are established by Health and Safety staff. Activity specific requirements are determined based on a safety and health hazard analysis. Section 7.0, Environmental, Safety, and Health Protection, describes the function of this program in more detail.

4.5.1.3 Special Waste Management

During the remediation of the Millsite and properties, there are hazardous substances other than byproduct material that may require remediation (see task description for Investigation and Remediation of Hazardous Substances Other Than Radium-226 under Section 4.2.1). The IWMA has been designated to store hazardous wastes, mixed wastes (RCRA hazardous wastes that are also radioactive), wastes regulated by the Toxic Substances Control Act (TSCA), and wastes that pose an acute health and safety hazard. All of the wastes stored at the IWMA must be containerized. The IWMA is operated in accordance with the requirements for a RCRA storage facility. Procedures have been developed for operation of the IWMA.

Other wastes also may be encountered that do not need to be stored at the IWMA but require special handling as a best management practice. These are wastes that present low hazards, typically soils contaminated with waste oils. These wastes will be placed in the BMDPA where containerization is not required. These wastes will be placed on plastic in a bermed area and covered with plastic, as necessary, to prevent releases to the environment.

4.5.1.4 Supplemental Standards Activities

Application of supplemental standards is being considered for properties containing vegetation that cannot be readily restored if destroyed or damaged, particularly piñon/juniper woodlands. In addition, city streets and utilities in the City of Monticello, and the Highway 191 embankment and along Highway 666 are being considered for supplemental standards because the cost of excavation is excessive compared to the benefits of remediation. In a May 8 and 9, 1997, meeting, DOE, EPA, and the State reached consensus on most major issues concerning the approach for implementation of supplemental standards. DOE developed a schedule for implementation of supplemental standards, which is included in Appendix C. DOE will have to enter into binding agreements with the City of Monticello and UDOT for long-term management of contamination.

For OU III, supplemental standards applications will also be prepared for Upper, Middle, and Lower Montezuma Creek if the selected alternative leaves contamination above the standards in 40 CFR 192 in place. Application of supplemental standards will be based on the criterion in 40 CFR 192.21(b): remediation would cause environmental harm that is excessive compared to the health benefits of remediation.

4.5.1.5 Wetlands Protection and Restoration

Although impacts to wetland areas will be minimized as much as possible, CERCLA cleanup activities will affect some wetland areas. DOE's goal is to ensure that (1) CERCLA cleanup activities comply with wetlands regulations and guidance; (2) adverse effects to wetland areas are *avoided* where possible; (3) adverse effects to wetland areas are *minimized*; and (4) unavoidable adverse effects to wetland areas are *mitigated*.

Wetland areas at the MMTS and MVP Site total 42 acres. Divided into wetland types, these areas include (1) perennial streams (functions typically include flood-flow alteration and medium wildlife and aquatic diversity); (2) intermittent streams (functions typically include flood-flow alteration, groundwater recharge, and low wildlife diversity); (3) emergent wetlands (functions typically include groundwater discharge and recharge, and low wildlife diversity); (4) depressions (functions typically include ground-water recharge, sediment retention, and low wildlife diversity); and (5) stock ponds (functions typically include sediment retention and groundwater discharge).

Excluding OU III, only 12.4 acres of wetland areas will be remediated or will be affected by remedial activities. Affected wetland areas include: perennial streams (5.7 acres), intermittent streams (1.0 acre), emergent wetlands (0.70 acres), depressions (4.3 acres), and stock ponds (4.3 acres). Wetland areas will be restored in situ where possible; otherwise, they will be re-created at the OU I Millsite. Mitigation will focus on the restoration of wetland functions and the areal extent of wetland type, the minimization of erosion, and the prevention of noxious and non-noxious weed encroachment. Revegetation efforts will emphasize the use of ecotype seed and cuttings from local willows. Remediation of Montezuma Creek Canyon as part of the OU III soil and sediment remedial action will result in the disturbance of an additional 2 acres which will be restored.

Monitoring at each restored wetland area will begin at the end of the growing season following restoration to allow mitigation success to be evaluated. Monitoring will continue for 3 years or until the success criteria are met. Success criteria include restoration of 80 percent of the baseline canopy cover, 80 percent of the baseline shrub and tree density, and a combined frequency of obligate, facultative, and facultative wetland plants in proportions similar to those of the baseline. Wetland delineations will be

conducted in the third year to verify restored acreage. Annual monitoring reports will be submitted to EPA.

4.5.1.6 Deletion of the Sites from the National Priorities List

Upon completion of remedial action at the MMTS and MVP Site, DOE will prepare a Completion Report for each property. The information in the Completion Reports along with other required information will be compiled into a RAR for each OU within each site. The RAR will reference the property portfolios, completion reports, and various sampling protocols under which the work was performed. These documents are available in the Administrative Record and the DOE-GJO project file archives.

The purpose of the RARs is to demonstrate that remedial action for each OU is complete in accordance with CERCLA. EPA and State concurrence on the RAR for OU A of the MVP Site occurred on January 13, 1997 and for OU C of the MVP Site on March 2, 1998. A punch list of outstanding items is included, in the appendix of the RAR for each OU, to document action items to be completed prior to the approval of the Close-Out Report (COR).

For OU III of the MMTS, an interim RAR will be prepared because the selected remedy for OU III will likely be a LTRA. For LTRAs, an interim RAR is prepared when the physical construction of the selected remedy is completed and the unit is operating as designed.

A Preliminary Close-Out Report (PCOR) will be prepared for each site to document that all physical construction at the site has been completed. The PCOR contains a schedule for activities that must be completed prior to issuing a Final Close-Out Report. In the case of the MMTS, the PCOR will provide a schedule for the operating phase of the remedy selected for OU III and the date when the remedy is expected to achieve the clean-up standards.

The COR documents that all cleanup levels established in the ROD have been achieved. EPA, after consultation with the State, will determine whether appropriate response actions have been implemented and whether any potential threat to public health or the environment remains. This determination may be indicated by documenting by memorandum that enforcement inspection has been performed and that EPA and the State concur that the remedial action complies with construction specifications. If EPA determines, after consultation with the State, that no further response is appropriate, EPA will initiate action to delete the sites from the NPL, consistent with CERCLA, as amended, the NCP, and applicable EPA policy and guidance.

The COR documents that all cleanup levels established in the ROD have been achieved. The COR is reviewed by EPA Headquarters and the State, and EPA region and State peers. DOE will incorporate these comments and the Final COR will be submitted to the EPA Regional Administrator for approval. Approval of the COR by the Regional Administrator signifies the superfund NPL Site completion and that the site has entered the operation and maintenance phase. All punch list items must be complete at this time. Concurrent with the Regional Administrator's review, DOE will prepare and publish a Notice of Intent to Delete (NOID) in the Federal Register and will compile deletion docket material. The NOID will be available for public review, and a responsiveness summary must be prepared addressing any comments received. Upon assembling all documentation in the Certification Docket, and receiving approval from the Regional Administrator, a Notice of Deletion will be published in the Federal Register.

If, at any step, EPA determines, after consultation with the State, that the documentation is not sufficient to warrant deletion from the NPL, EPA shall notify DOE in writing and provide specific reasons for the determination. DOE shall take appropriate actions to correct any deficiencies noted and shall resubmit the documentation to EPA.

CORs will be submitted for each site separately, and the sites will be deleted from the NPL separately. Consideration will be given to deleting OUs in the MMTS separately.

Figure 4-4 summarizes the process that will be followed for deletion of the MVP and MMTS Sites. This process follows the EPA guidance presented in *Close-out Procedures for National Priorities List Sites* (EPA 1995).

4.5.1.7 Five-Year Reviews

The NCP acknowledges that CERCLA cleanups may leave some contamination in place. Such instances must be part of a selected remedy by using CERCLA evaluation criteria (40 CFR 300.430[e-f]). However, EPA must review the protectiveness of that remedy at least every 5 years after remedial action begins (40 CFR 300.430 [(f)(4)(ii)]) (EPA 1991). Five-year reviews do not end with deletion of a site from the NPL but continue until contaminant levels allow unlimited use and unrestricted exposure at that site (55 FR 8699 1990). DOE will prepare the CERCLA 5-year review that will be submitted to EPA and the State for evaluation. If, at a later date, the regulators determine that the completed remedial action is no longer protective of human health or the environment under CERCLA, DOE is responsible for developing and implementing a Contingency Plan for remediating the contamination or otherwise controlling the risk that it poses. Furthermore, DOE is responsible for documenting its activities under the Contingency Plan and reporting them to EPA, the State, affected local governments, and the public.

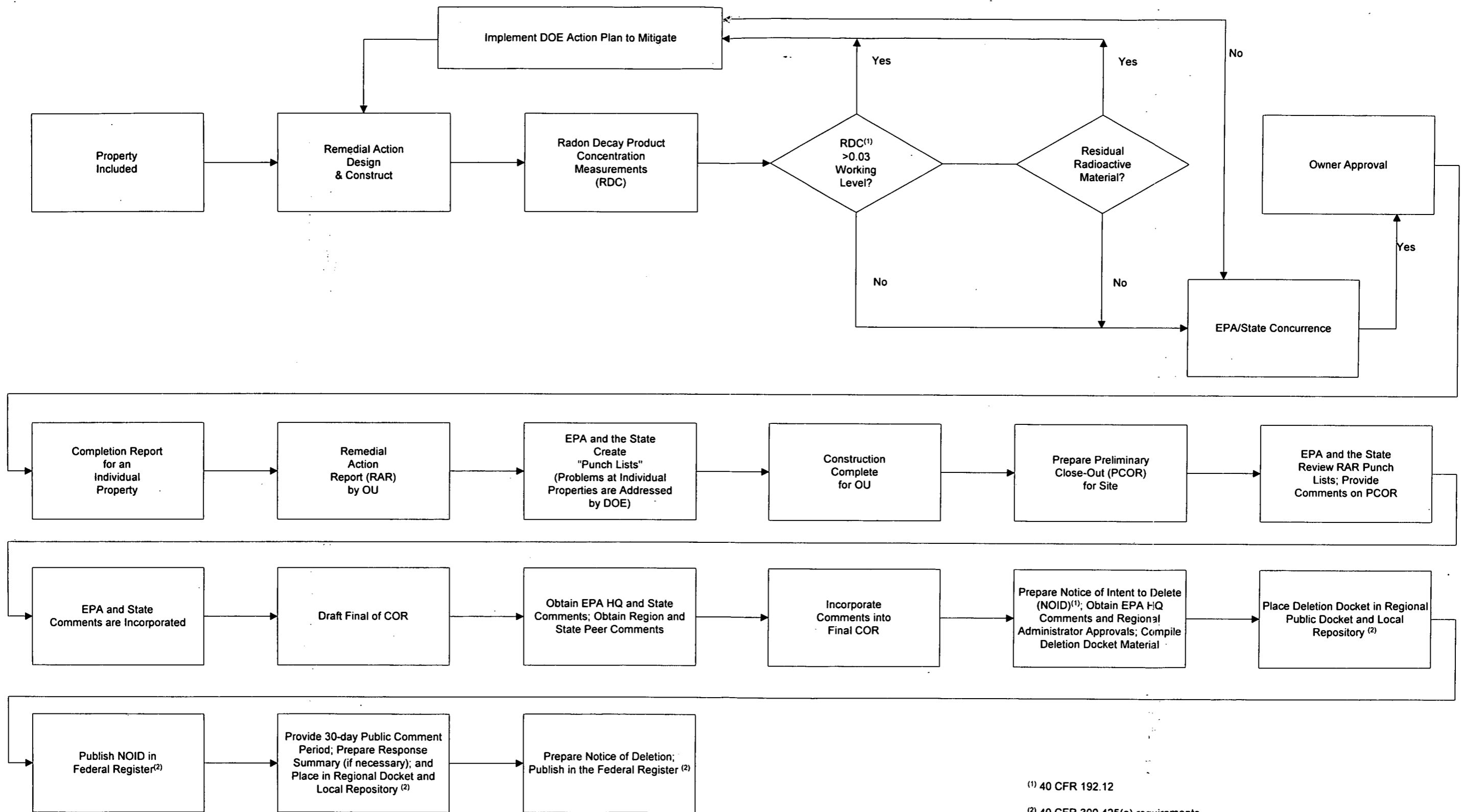
Except for the Repository and areas where supplemental standards are applied, contamination exceeding risk-based cleanup levels or radium-226 in excess of cleanup standards in 40 CFR 192 will not remain on the Millsite, peripheral properties, or vicinity properties. Five-year reviews will need to be conducted at the on-site Repository and any areas where supplemental standards are applied. The first 5-Year Reviews were issued February 13, 1997. The next 5-Year Review will be completed February 13, 2002.

4.5.2 Documents

Community Relations Plan (DOE 1996b): The CRP for the MMTS has been updated each year since the SMP was first completed in March 1995. The CRP is intended to be a "living" document that will be updated to reflect major new issues, activities, and milestones during the course of all work to be performed at Monticello. DOE has committed to updating this plan the first quarter of each FY.

Monticello Projects Health and Safety Plan (DOE 1997b): A comprehensive HASP was submitted to EPA and the State in April 1995 and an updated version in 1997. The content of this plan is discussed in Section 6.0 of the SMP. Task Specific HASPs are appended to the HASP as additional detail is added to the HASP for new activities. The HASP is currently undergoing major revision.

Special Waste Management Plan (DOE 1997c): The Special Waste Management Plan presents the procedures for identification, characterization, and management of concentrations of suspect nonradiological hazardous substances that may be encountered on the Millsite and on vicinity and peripheral properties. This plan is a guide for field use and regulatory determinations that must be made prior to and during construction. The Plan was initially submitted to EPA and the State for review and



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Figure 4-4. Steps for Deletion of Sites from the NPL

concurrence in March 1995. Comments on the Plan were received from EPA and the State and a revised version was submitted May 1996 with a final version submitted April 1997. The plan also contains procedures for operation of the IWMA.

Monticello Wetlands Master Plan (DOE 1996d): The Wetlands Master Plan establishes the overall plan for protecting MMTS and MVP Site wetland areas during the remedial process. Provided in the Wetlands Master Plan are mitigation plans for disturbed wetland areas at OU II, the MVP Site, and a small portion of OU III that was remediated for a pipeline installation. The mitigation and monitoring sections of the Wetlands Master Plan will be applied to OU I (when the final topography and land use are known) and to the remainder of OU III. Individual mitigation plans previously submitted to and approved by EPA and/or the State are not part of the Wetlands Master Plan.

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5.0 Project Schedules and Milestones

5.1 Establishing Project Schedules and Milestones

The SMP establishes the overall plan for remedial actions at the MMTS and the MVP Site and milestones against which progress can be measured. The SMP was first prepared in 1995, and this document represents the first revision. The stipulated penalty milestones listed in this section are the enforceable milestones unless superseded by revised schedules agreed to by EPA, the State, and DOE, or by amendments to the FFA.

5.1.1 Requirements of the Federal Facilities Agreement

Section XXX of the FFA states that "... [a]ll terms and conditions of this Agreement which relate to interim or final remedial actions, including corresponding timetables, deadlines, or schedules ... shall be enforceable." The FFA required DOE to submit a Work Plan establishing how DOE would complete the tasks required by the FFA and specific timetables and schedule for completion of remedial action. The FFA Work Plan was completed May 1989 and established the enforceable timetable for completion of primary documents identified in the FFA and completion of remedial action.

The scope of work, timetables, and schedule for remedial action presented in the FFA Work Plan were superseded by the RDWP (DOE 1992b). The RDWP was identified as a primary document and was submitted as a final document in January 1992. The RDWP established a revised timetable with specific stipulated penalty milestones. The stipulated penalty milestones were associated with submittal of primary design documents that would be generated as part of the remedial design and notice of award to subcontractors for remedial action work.

The timetable in the RDWP is superseded by the timetables established in this SMP. The SMP has been identified as a primary document. DOE, EPA, and State concurrence on the SMP is the basis for establishing new enforceable milestones and nonenforceable target dates for all activities extending through completion of the Monticello Projects.

5.1.2 Enforceable Milestones and Nonenforceable Target Dates

Enforceable milestones and nonenforceable target dates for the Monticello Projects are described in Tables 5-1 through 5-7. Enforceable milestones are identified for those activities in the next FY (1999) and the two subsequent FYs (2000 and 2001) for which stipulated penalties may be assessed against DOE. Nonenforceable target dates are identified for those activities in subsequent out-years (FY 2002 and beyond) for which no stipulated penalties may be assessed against DOE. Target dates have also been established in the current and subsequent years for major activities that must be completed as interim, nonstipulatable milestones.

In view of recent budget cuts and future budget uncertainties, DOE faces a significant challenge in maintaining an environmental program that meets the rigorous schedule of DOE's compliance agreements, including FFAs, in a manner that maximizes use of the Department's resources. A key element in meeting this challenge is to develop an approach to setting milestones in FFAs that provides accountability, focuses resources on high priority activities, and recognizes fiscal and technical realities.

To meet these objectives, DOE has proposed and EPA and the State have concurred on the 3-year (FY + 2) rolling milestone approach for establishing a schedule for completion of remedial action activities at the Monticello NPL Sites. Under this approach, schedule dates are designated as either "milestones" or "target dates." Milestones and target dates are established in consideration of the site's environmental budget allocation. Milestones are enforceable deadlines established for near-term (FY + 2) activities for which greater fiscal and technical certainty exists. Target dates are nonenforceable deadlines for longer-term activities (greater than FY + 2) and would be converted to milestones on an annual basis. Target dates may also be established in the FY +2 time frame and beyond for completion of activities leading to stipulated penalty milestones. Each year, after receipt of the Approved Funding Program that reflects the final Congressional appropriation for the current fiscal year, existing milestones would be reviewed and adjusted if necessary. An additional year of milestones (the FY + 2 year) would also be established, adjusting the previous target dates if necessary.

Under DOE's proposed approach, DOE, EPA, and the State would consider a variety of factors during the annual review and establishment of milestones and target dates. These include funding availability, latest information on cost estimates, site priorities identified through consultations between DOE, EPA, the State, and stakeholders, new or emerging technologies, and other relevant factors. Renegotiations of milestones would occur in the event of insufficient Congressional appropriations. Out-year nonenforceable target dates would be established using realistic assumptions. DOE, EPA, and the State would recognize the uncertainties associated with the long-term target dates that lay out DOE's strategic vision of how it ultimately plans to accomplish the project. Furthermore, DOE would provide the regulatory agencies and other stakeholders with an opportunity to have a meaningful voice in formulating the site budget and developing priorities at the site.

EPA and the State agree to meet with DOE on an annual basis to renegotiate the milestone and target dates established in the SMP. However, the enforceable milestones described in Tables 5-1 through 5-7 for those activities in the current FY (1999) and the two subsequent FYs (2000 and 2001) may only be modified as part of this renegotiation or through the already existing procedures of the FFA. Further, EPA and the State reserve the right to initiate any action deemed necessary to enforce these milestones. DOE, EPA, and the State agree to abide by the existing procedure to resolution of disputes (Section XIV Resolution of Disputes, Monticello FFA - December 1988) and will make all reasonable efforts to informally resolve any disputes involving insufficient funding before invoking formal dispute Procedures.

5.2 Project Schedules

Table 5-1 is a summary of the enforceable milestones through and including FY 2001. Table 5-2 lists all of the Monticello Projects documents that have been completed since the March 1995 version of the SMP or will be submitted to EPA and the State for review and concurrence. The submittal dates in Table 5-2 are usually based on the late start and late finish dates for completion of tasks; therefore, document submittals may occur sooner. The submittal date for a document is defined as the date that the document is received by EPA and the State. As work on the projects progresses, additional documents may be submitted. Additional documents will be identified in the FFA monthly as soon as it is determined that they are required.

Issues critical to the completion of remedial action on the Monticello projects are discussed below.

Monticello Mill Tailings Site Operable Unit I—Millsite Remediation and Restoration Schedule

Assumptions critical to project completion and the proposed schedule are:

- remediation of contamination in addition to the amount that the Millsite Remediation Subcontractors' current working schedule is based on will not significantly delay Repository closure, and
- interfacing with the public on the selection of a preferred land use for the Millsite will not result in substantial delays.

Monticello Mill Tailings Site Operable Unit II—Peripheral Property Schedule

The schedule for remediation of the peripheral properties shows milestones associated with design completion and construction complete for each property and completion of remedial action and submittal of the RAR for the entire OU. Completion of engineering design is defined as State approval of the design and construction complete is defined as contractor acceptance of the subcontractor work through a Notification of Final Completion Inspection. Most of the peripheral properties are being remediated in phases. The phases have been developed on the basis of different land types, construction issues, land-owner issues, or areas associated with Halls' Ditch. The peripheral property phase with the latest milestone date is shown on the schedule for remedial design and construction complete. The schedule and dates included in this SMP supersede the schedule and dates presented in the RD/RA Work Plan for OU II.

Remediation of some phases of the peripheral properties will be conducted with the remediation of the Millsite. Therefore, the construction schedule is based on the OU I Millsite Remediation Subcontractor's construction schedule. Preparation of peripheral property designs by the subcontractor will not be required. The performance specifications in the *OU I Millsite Remediation Design*, concurred on by EPA and the State, provide the basis for remedial action.

The only assumption critical to the OU II schedule is that negotiations on each RAA with the property owner can be completed within scheduled durations.

Monticello Mill Tailings Site Operable Unit III—Surface Water, Groundwater, and Contaminated Soils and Sediments in Montezuma Creek Canyon

This schedule establishes the major activities required for reaching decisions regarding cleanup of Montezuma Creek Canyon and the preferred remedy for remediation of surface-water and groundwater contamination. Assumptions critical to the schedule include:

- review and concurrence on decision documents for remediation of soil and sediment can occur concurrently with design and procurement activities, and
- the short durations for preparation and review of the interim proposed plan and interim ROD can be adhered to.

Monticello Vicinity Properties Site Operable Units A, B, C, D, E, F, G, and H

The MVP Site schedule shows milestones for completion of engineering design and submittal of a Draft Final RAR for each OU. Completion of engineering design is defined as State approval of the design for the latest property in the OU. Submittal of the Draft Final RAR to EPA and the State equates to completion of remedial action. Target dates have been established for submittal of the latest Draft Final Completion Report and construction complete for each OU. Construction complete is defined as contractor acceptance of the subcontractor work through a Notification of Final Completion Inspection. Submittal of a Draft Final COR for the site has also been established as a milestone.

The overall objective for scheduling the MVP Project was to attain deletion of the site from the NPL at the earliest reasonable time, allowing for schedule float on certain high risk activities. DOE is working to a schedule for deletion by September 10, 1999, however, because of uncertainties associated with meeting this schedule, it was not used to develop proposed penalty milestones.

The following assumptions are critical to the dates that have been proposed in the SMP:

1. The Final COR cannot go to the EPA Regional Administrators for approval until all punch list items are closed.
2. Construction is completed on OU H properties by December 28, 1998. Issues required to complete supplemental standards are assumed to be completed by May 30, 1999.
3. Consensus is reached among EPA, State of Utah, and DOE that the source of radon in MS-00859 is naturally occurring radioactive material by December 28, 1998. The deletion schedule will not be met if active restoration is required.
4. The stipulated penalty milestones established for design complete and submittal of the draft final RAR are tied to reviews by EPA and the State. If these reviews are not completed per the negotiated deletion schedule, then DOE will have good cause to request an extension to the stipulated penalty milestone.

5.3 Enforceable Milestones and Nonenforceable Target Dates

Enforceable milestones and nonenforceable target dates have been established for submittal of primary documents to EPA and the State, concurrence on property design documents, construction complete for OU II properties, construction complete for vicinity properties, and for submittal of Draft Final Remedial Action Reports. The milestones and target dates for each OU for each project are summarized in Table 5-1 for fiscal years 1999, 2000, and 2001, and detailed listings are provided in Tables 5-3 to 5-7. Should there be inconsistencies in the tables or texts, stipulated penalty milestone dates are identified in Table 5-1.

Table 5-1. Penalty Milestones in Fiscal Years 1998, 1999, and 2000

Monticello Mill Tailings Site	
OU I	MILESTONE
Millsite Remediation	
Repository Construction Complete	September 30, 2000
Draft-Final RAR for Remediation	November 30, 2000
Millsite Restoration	
Submit Pre-Final Design to EPA/Utah - Primary Document	September 1, 1999
Notice of Award	February 1, 2000
Complete Millsite Restoration	July 17, 2001
Draft-Final RAR for Restoration	September 17, 2001
OU II	
Complete Remedial Action Designs	February 16, 1999
OU II Draft-Final Remedial Action Report	February 28, 2000
OU III	
Remedial Investigation	
Draft-Final Remedial Investigation Report	February 2, 1998 (complete)
Soil and Sediment Decision Documents	
Draft-Final Alternatives Analysis	February 2, 1998 (complete)
Draft-Final Action Memorandum	May 5, 1998 (complete)
Surface Water/Groundwater Interim Decision Documents	
Draft-Final Interim Proposed Plan	March 16, 1998 (complete)
DOE sign Interim ROD	September 17, 1998
Soil and Sediment RD/RA	
Draft-Final Remedial Action Design	March 23, 1998 (complete)
Supplemental Standards Applications	January 28, 1999
Complete Remedial Action (including restoration)	September 30, 1999
Surface Water/Groundwater RD/RA IRA	
Draft-Final RD/RA Work Plan	March 15, 1999
Draft-Final Design	October 30, 1999
Monticello Vicinity Properties Site	
OU B	MILESTONE
Submit Draft Final RAR	December 24, 1997 (complete)
OU C	
Submit Draft Final RAR	October 15, 1997 (complete)
OU D	
Submit Draft Final RAR	March 18, 1998 (complete)
OU E	
Submit Draft Final RAR	March 18, 1998 (complete)
OU F	
Design Complete	July 7, 1999 (complete)
Submit Draft Final RAR	December 29, 1997 (complete)
OU G	
Submit Draft Final RAR	September 12, 1998
OU H	
Submit Draft Final RAR	April 29, 1999
Deletion Milestone	
Draft-Final Close-Out Report	June 26, 1999

Table 5-2. List of Monticello Projects Documents, Submittal Date, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Monticello Mill Tailings Site			
Operable Unit I			
Wastewater Treatment Plant			WWTP Testing Plan February 1995 - (Complete)
Millsite Remediation	Design and Specification Package for Millsite Remediation Pre-Final, April 28, 1995 - (Complete) Final, July 12, 1995, (Complete) Final Concurrence, (Complete)	OU I Millsite Remediation Intermediate Design January 27, 1995 - (Complete)	Repository Access Area Design April 1995 - (Complete)
			Subcontractor Final Haul Road Design December 1995 - (Complete May, 1996)
			Subcontractor Final Decontamination Pad Design submittals Draft submitted for comments June 1996. Comments incorporated and revision sent July 1997.
			Threatened, Endangered and Sensitive Species Survey results July 1995 - (Complete)
			Archaeological Mitigation Plan May 1995 - (Complete) Results of Archaeological Mitigation Effort September 1995 - (Complete June, 1996)
			Millsite Completion Report Draft, November 1999 - 60 day review
Millsite Restoration		Millsite Restoration Conceptual Design December 31, 1996 - 60 day review-(Complete)	Presentation materials will be submitted 15 days prior to public meetings
		Millsite Restoration Intermediate Design March 1, 1999 - 45 day review	
	Millsite Restoration Design Pre-Final, September 1, 1999 - 45 day review Final, November 30, 1999 - 30 day review Final Concurrence, December 30, 1999		

Table 5-2 (continued). List of Monticello Projects Documents, Submittal Date, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit I (continued)			
General to OU I	RD/RA Work Plan Draft, April 27, 1995 - (Complete) Draft Final, August 25, 1995 - (Complete) Final Concurrence, September 24, 1995 (Complete)		
	Explanation of Significant Difference and Notice Draft, March 22, 1995 - (Complete) Draft-Final, April 14, 1995 - (Complete) Public Notice of Availability, (Complete)		
	Remedial Action Report Millsite Remediation Draft, June 30, 2000 Draft-Final, November 30, 2000		
	Remedial Action Report Millsite Restoration Draft, April 17, 2001 Draft-Final, September 17, 2001		
Operable Unit II			
	Remedial Action Designs (future completions only), Supplemental Standards Properties MP-00391 III, MP-01077, and MP-01041, December 31, 1998		Site Assessment Reports March 1995 (Complete)
	RD/RA Work Plan Draft, March 22, 1995 - (Complete) Draft Final, July 20, 1995 - (Complete) Final Concurrence, (Complete)		Final Completion Report Draft, November 30, 1999 - 60 day review Draft-Final, March 30, 2000 - 60 day review
	Sampling and Analysis Plan for Non-Radiological Suspect Hazardous Substances - MP-00181 Phase IV Draft, May 5, 1995 - (Complete) Draft Final, August 3, 1995 - (Complete) Final Concurrence, (Complete)		

Table 5-2 (continued). List of Monticello Projects Documents, Submittal Date, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit II (continued)			
	Sampling and Analysis Plan for Non-Radiological Suspect Hazardous Substances - MP-00990 Draft, July 7, 1995 - (Complete) Draft Final, November 4, 1995 - (Complete February 28, 1996)		
	Remedial Action Report Draft, October 28, 1999 Draft-Final, February 28, 2000		
Operable Unit III			
	RI/FS Work Plan Draft-Final, September, 1995 - Complete Final Concurrence—Ongoing negotiations		
	Remedial Investigation Report Draft, June 27, 1997 - Complete Draft-Final, February 2, 1998 - Complete Final Concurrence, October 29, 1998	Human Health Risk Assessment Draft, March 18, 1997 - Complete Ecological Risk Assessment Draft, June 6, 1997 - Complete	
	Alternatives Analysis for Soil and Sediment Draft, June 26, 1997 - Complete Draft-Final, February 2, 1998 - Complete Final Concurrence, September 30, 1998		
	Action Memorandum for Soil and Sediment Draft, December 16, 1997 - Complete Draft-Final, May 5, 1998 - 30 day review Final distribution, June 30, 1998		
	Remedial Design for Soil and Sediment Draft-Final, March 23, 1998 - Complete Final Concurrence - May 19, 1998		

Table 5-2 (continued). List of Monticello Projects Documents, Submittal Date, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit III (continued)			
	Supplemental Standards Applications for Soil and Sediment Draft, September 30, 1998 - 60 day review Draft-Final, January 28, 1999 - 30 day review Final Concurrence, February 27, 1999		
	Feasibility Study Report for Surface and Groundwater Draft (pre-IRA), September 2, 1997 - Complete Revised Draft (pre-IRA), March 30, 1998 - Complete Draft (post-IRA), January 15, 2003 - 60 day review Draft-Final (post-IRA), May 15, 2004 - 30 day review Final Concurrence, June 15, 2004		
	Interim Proposed Plan Draft, February 11, 1998 - Complete Draft-Final, March 16, 1998 - Complete Final Concurrence, March 26, 1998 - Complete		
	Interim ROD Draft, May 21, 1998 - Complete Draft-Final, August 17, 1998 - 20 day review Final, September 17, 1998 DOE sign by September 17, 1998 Final Concurrence (ROD signed), September 30, 1998		
	Interim Remedial Action RD/RA RD/RA Work Plan Draft, November 15, 1998 - 60 day review Draft-Final, March 15 1999 Remedial Design Draft, June 30, 1999 Draft-Final, October 30, 1999		

*Table 5-2 (continued). List of Monticello Projects Documents, Submittal Date,
and Proposed Review Duration*

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit III (continued)			
	Proposed Plan for Surface and Groundwater Draft, August 5, 2004 - 60 day review Draft-Final, December 15, 2004 - 30 day review Final Concurrence, January 15, 2005		
	ROD for Groundwater and Surface Water Draft, January 15, 2005 - 60 day review Draft-Final, May 15, 2005 - 30 day review Final Concurrence, (ROD signed) June 15, 2005		
	RD/RA Work Plan for Water Remediation Draft-Final, August 15, 2005 - 60 day review		
	Design for Water Remediation Pre-Final, June 15, 2006 - 60 day review		
	Interim Remedial Action Report Draft-Final, January 15, 2008		

Table 5-2 (continued). List of Monticello Projects Documents, Submittal Date, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Monticello Vicinity Properties Site			
	Radiological and Engineering Assessments (future completions only) OU F, Engineering Complete July 7, 1997 (complete) OU G, Engineering Complete September 4, 1997 (complete) OU H, Engineering Complete October 31, 1998 (complete) 60 day review		Last Draft-Final Completion Report submitted OU A July 7, 1997 (complete) OU B December 11, 1997 (complete) OU C June 27, 1997 (complete) OU D December 31, 1997 (complete) OU E January 16, 1998 (complete) OU F March 12, 1999 OU G January 30, 1999 (complete) OU H April 29, 1999 60 day review
	Sampling and Analysis Plan for Non-Radiological Suspect Hazardous Substances at MS-00685/MS-00687 Draft, October 30, 1995 - (Complete) Draft-Final, February 27, 1996 - (Complete)		Site Assessment Reports March 1995 - (Complete)
	Remedial Action Reports - Draft Final OU A - November 8, 1996 (complete) OU B - December 24, 1997 (complete) OU C - October 15, 1997 (complete) OU D - March 18, 1998 (complete) OU E - March 18, 1998 (complete) OU F - December 24, 1997 (complete) OU G - September 12, 1998 OU H - April 29, 1999 60 day review		Site Boundary Proposal Draft, March 31, 1995 - (Complete) Draft-Final, May 1, 1995 - (Complete) Final, (Complete)
	Preliminary Close-out Report, April 29, 1999 Draft-Final Close-out Report: June 26, 1999	Publish NOID in the Federal Register, January 8, 2000	

Table 5-2 (continued). List of Monticello Projects Documents, Submittal Date, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
General to Both Sites			
	Special Waste Management Plan March 7, 1995 - (Complete) Revision transmitted April 3, 1997		Health and Safety Plan April 1995 - (Complete), in revision
	Monticello Site Management Plan Final, March 15, 1995 (Complete) Revision 1 in progress		Prompt Alpha-Track Study for Monticello, Utah, Vicinity and Peripheral Properties March 1995 -(Complete)
	Community Relations Plan (revised) Draft, March 22, 1995 - (Complete) Draft-Final, (Complete) Final Concurrence, (November, 1995) Annual updates are prepared each year.		Long-Term Surveillance and Maintenance Plans: OU I Final Plan (excluding Millsite), September 30, 1998 - 60 day review Supplemental Standards Properties, streets and utilities, November 4, 1996 -in revision, resubmittal TBD OU III Draft Plan, TBD - 60 day review Millsite Draft Plan, TBD - 60 day review Umbrella LTSM Plan, September 30, 1998 - 60 day review
	Supplemental Standards Documents Draft, March 31, 1995 - (Complete) Revised Draft November 4, 1996 (complete) Reviewed December 23, 1996 (complete) In revision, resubmittal January 21, 1999		Air Monitoring Work Plan - resubmitted September 1997
	Wetlands Master Plan Draft-Final , November 30, 1995		
Notes: Stipulated Penalty Milestones deliverables are indicated in boldface type. All durations are shown in calendar days. The date for final concurrence assumes that dispute resolution is not invoked. TBD - To Be Determined			Supplemental Standards ESDs and Factsheets Drafts, January 21, 1999 Public Notice Published, February 19 - March 4, 1999 Public Meeting, March 18, 1999 Public Comment Period, March 5 - April 5, 1999 Draft-Final with Comment Responses, April 19, 1999

Table 5-3. Monticello Mill Tailings Site OU I Milestones and Target Dates

Millsite REMEDIATION	
Tailings Removal	Milestone
Submit Pre-Final Design and Specification Package for Millsite Remediation - Primary Document	April 28, 1995 (Complete)
Notice of Award	November 30, 1995 (Complete September 8, 1995)
Initiate On-site Construction Activities	January 1, 1996 (Complete October 27, 1995)
Repository Construction Complete	September 30, 2000
Millsite RESTORATION	
Submit Conceptual Design to EPA/Utah - Secondary Document	December 24, 1996 (Complete)
Submit Pre-Final Design to EPA/Utah - Primary Document	September 1, 1999
Notice of Award	February 1, 2000
Millsite Restoration Complete	July 17, 2001
OPERABLE UNIT COMPLETION	
	MILESTONE
Draft-Final Remedial Action Report for Millsite Remediation	November 30, 2000
Draft-Final Remedial Action Report for Millsite Restoration	September 17, 2001

Table 5-4. Monticello Mill Tailings Site OU II Peripheral Property Milestones and Target Dates

PERIPHERAL PROPERTY	MILESTONE
MP-00105 (Suspect Hazardous Substance Property)	
Design Complete	December 30, 1996 (Complete March 6, 1996)
Construction Complete (target)	November 30, 1999
MP-00178 (Supplemental Standards Property)	
Design Complete (if required)	December 31, 1998
Construction Complete (target)	November 30, 1999
MP-00179	
Design Complete	August 11, 1995
Construction Complete (target)	November 30, 1999
MP-00180	
Design Complete	(Included with MP-00845)
Construction Complete (target)	November 30, 1999
MP-00181 (Suspect Hazardous Substance Property)	
Sampling and Analysis Plan - Primary Document	August 3, 1995 (Complete)
Design Complete	April 10, 1996
Construction Complete (target)	November 30, 1998
MP-00198	
Design Complete	May 7, 1992
Construction Complete (target)	Complete
MP-00211 (Suspect Hazardous Substance Property)	
Design Complete	April 10, 1996 (Complete)
Construction Complete (target)	November 30, 1998
MP-00391 (Supplemental Standards Property)	
Design Complete	February 16, 1999
Construction Complete (target)	November 30, 1999
MP-00845	
Design Complete	December 31, 1998
Construction Complete (target)	November 30, 1999

Table 5-4 (continued). Monticello Mill Tailings Site OU II Peripheral Property Milestones and Target Dates

PERIPHERAL PROPERTY	MILESTONE
MP-00886	
No Action Completion	
MP-00887 (Suspect Hazardous Substance Property)	
Design Complete	April 10, 1996
Construction Complete (target)	Complete
MP-00888	
Design Complete	December 16, 1993
Construction Complete (target)	Complete
MP-00947	
Design Complete	April 28, 1994
Construction Complete (target)	Complete
MP-00948 (Supplemental Standards)	
Design Complete	December 31, 1998
Construction Complete (target)	November 30, 1999
MP-00949 (Supplemental Standards)	
Design Complete	December 31, 1998
Construction Complete (target)	November 30, 1999
MP-00950, MP-00951, MP-00988, MP-01083, MP-01084	
Design Complete	January 2, 1996 (Complete November 17, 1995)
Construction Complete (target)	Complete
MP-00963	
Design Complete	April 20, 1993
Construction Complete (target)	Complete
MP-00964	
Design Complete	December 10, 1991
Construction Complete (target)	Complete

Table 5-4 (continued). Monticello Mill Tailings Site OU II Peripheral Property Milestones and Target Dates

PERIPHERAL PROPERTY	MILESTONE
MP-00990 (Suspect Hazardous Substance Property)	
Submit Sampling and Analysis Plan to EPA/Utah	November 4, 1995 (Complete February 28, 1996) ^a
Design Complete	January 3, 1997 (Complete October 17, 1996)
Construction Complete (target)	September 30, 1997 (complete)
MP-01040	
Design Complete	July 31, 1998
Construction Complete (target)	November 30, 1998
MP-01041 (Supplemental Standards Property)	
Design Complete	February 16, 1999
Construction Complete (target)	November 30, 1999
MP-01042	
Design Complete	August 11, 1995
Construction Complete (target)	November 30, 1998
MP-01077 (Supplemental Standards Property)	
Design Complete	February 16, 1999
Construction Complete (target)	November 30, 1999
MP-01080 (Repository Property)	
Design Complete	NA
Construction Complete (target)	NA
MP-01102	
Design Complete	June 21, 1997
Construction Complete (target)	November 30, 1998
OU II Construction Completion (target)	November 30, 1999
OU II Draft-Final Remedial Action Report	February 28, 2000

^aMilestone was not missed because comments specific to the SAP were not received. The document was revised based on comments received for property MS-00685 (Young's Machine Shop).

Table 5-5. OU III Milestones and Target Dates

DOCUMENT	MILESTONE
REMEDIAL INVESTIGATION	
Draft-Final Remedial Investigation Report	February 2, 1998 (complete)
FEASIBILITY STUDY	
Draft-Final (post-IRA) Feasibility Study Report	May 15, 2004
SOIL AND SEDIMENT DECISION DOCUMENTS	
Draft-Final Alternatives Analysis	February 2, 1998 (complete)
Draft-Final Action Memorandum	May 5, 1998 (complete)
SURFACE WATER/GROUNDWATER DECISION DOCUMENTS	
Draft-Final Interim Proposed Plan	March 16, 1998 (complete)
DOE sign Interim Record of Decision	September 17, 1998
Draft-Final RD/RA Work Plan	March 15, 1999
Draft-Final Proposed Plan	December 15, 2004
Draft-Final Record of Decision	May 15, 2005
SOIL AND SEDIMENT RD/RA	
Draft-Final RD/RA Work Plan	March 13, 1999
Draft-Final Remedial Action Design	March 23, 1998 (complete)
Supplemental Standards Applications	January 28, 1999
Complete Remedial Action (including restoration)	September 30, 1999
SURFACE WATER/GROUNDWATER RD/RA	
RD/RA Work Plan	August 15, 2005
Pre-Final Design	June 15, 2006
Initiate On-site construction activities (if required)	September 15, 2006
Interim RAR ^a	January 15, 2008

^aFor LTRAs, an interim RAR is prepared when the physical construction of the system is complete and the unit is operating as designed (EPA 1995). The RAR is amended and completed when the LTRA cleanup standards specified in the ROD are achieved.

Table 5-6. Monticello Vicinity Properties Site Milestones and Target Dates

VICINITY PROPERTY	MILESTONE
OU A	
Design Complete	March 1, 1996 (Complete September 6, 1994)
Construction Complete (target)	September 30, 1996 (Complete May 15, 1996)
Submit Draft Final RAR	November 8, 1996 (complete)
OU B	
Design Complete	February 1, 1996 (Complete)
Construction Complete (target)	September 30, 1997 (complete)
Submit Draft Final RAR ¹	December 24, 1997 (complete)
OU C	
Design Complete	February 1, 1996 (Complete February 13, 1996)
Construction Complete (target)	June 18, 1997 (complete)
Submit Draft Final RAR	October 15, 1997 (complete)
OU D	
Sampling and Analysis Plans Complete	February 27, 1996 (Complete)
Design Complete	October 17, 1996 (Complete)
Construction Complete (target)	November 4, 1997 (complete)
Submit Draft Final RAR	March 18, 1998 (complete)
OU E	
Design Complete	Complete
Construction Complete (target)	December 3, 1997 (complete)
Submit Draft Final RAR ²	March 18, 1998 (complete)
OU F	
Design Complete	July 7, 1997 (complete)
Construction Complete (target)	July 10, 1998
Submit Draft Final RAR ³	December 24, 1997 (complete)
OU G	
Design Complete	September 4, 1997 (complete)
Construction Complete (target)	December 11, 1997 (complete)
Submit Draft Final RAR ⁴	September 12, 1998
OU H	
Design Complete	October 31, 1998
Construction Complete (target)	December 30, 1998
Draft-Final RAR ⁵	April 29, 1999
DELETION MILESTONE	
Draft-Final Close-Out Report	June 26, 1999
Final Deletion Notice in Information Repository (target)	March 31, 2000

Footnotes to Table 5-6

1. Final RAR will be issued following EPA/UDEQ approval of MS-00563 and MS-00182 completion reports.
2. Final RAR will be issued following EPA/UDEQ approval of MS-00977, MS-00989, and MS-01065 completion reports.
3. Final RAR will be issued following EPA/UDEQ approval of MS-00859 completion report.
4. Final RAR will be issued following EPA/UDEQ approval of MS-81086 and MS-01103 completion reports.
5. OU H Draft Final RAR date does not include final approval of Supplemental Standards.

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6.0 Long-Term Surveillance and Maintenance Program

6.1 Long-Term Surveillance and Maintenance Program

DOE-GJO was designated as the DOE program office for "disposal site long-term surveillance and maintenance" on January 1, 1989 (DOE 1988a). In response to this designation, DOE-GJO established the Long-Term Surveillance and Maintenance (LTSM) Program, to carry out its assigned responsibilities. The assignment of this responsibility to the GJO has since been reconfirmed on two occasions (DOE 1992a and DOE 1996a).

The mission of the LTSM Program is to assume long-term custody of all completed DOE remedial action project disposal sites, as well as other sites assigned, and to establish a common office for the operation, security, surveillance, monitoring, and maintenance of these sites. Should a disposal site suffer severe damage or a catastrophic failure, DOE is responsible for undertaking any necessary corrective action.

Currently the program is responsible for annual surveillance and maintenance of 16 disposal sites assigned to DOE under Titles I and II of the Uranium Mill Tailings Radiation Control Act (UMTRCA), and section 151 of the Nuclear Waste Policy Act (NWPA), as appropriate. It is anticipated that by the year 2000 some 35 sites will have been assigned to the GJO LTSM Program, with additional sites assigned in the out-years, as remedial actions are completed.

DOE will need to perform LTSM at the Monticello sites because contaminants will be left in place at the OU I Repository. If supplemental standards are approved, contaminants also will be left on piñon-juniper properties and in city streets, the Highway 191 embankment, and utility corridors. LTSM also will be required to monitor restoration of wetlands. OU III will have LTSM monitoring needs as well, consisting of monitoring surface and groundwater quality and possibly of monitoring soil and sediment contamination.

DOE plans to transfer the MMTS and MVP Site to the LTSM program on October 1, 2001, according to the working schedule. Budgets and plans are being prepared for acceptance of these sites at that time and to conduct inspections and monitoring as specified in the Monticello Umbrella LTSM Plan and supporting LTSM Plans. The Umbrella LTSM Plan will be modified to meet CERCLA requirements for LTSM Plans.

6.2 Long-Term Surveillance and Maintenance Process

6.2.1 Inspections

The objectives of the site inspection are to report on the condition of the site, note any changes or modifications, and identify potential problems. The inspection detects and documents progressive changes over several years as a result of slow-acting processes. Inspections typically include monitoring of all engineered features such as drainage channels, vegetation, LDS, and LCR to assure that the site remedy is functioning as designed. Inspection requirements and groundwater, surface water, and wetlands monitoring will be specified in the site LTSM plans for the required sites and will be performed as necessary. Inspections will be conducted in accordance with the schedule set forth in the LTSM Plan. Inspection reports will be prepared following each inspection. Inspection reports will also be summarized in the CERCLA 5-year reviews.

6.2.2 Custodial Maintenance

Performance of routine maintenance will be completed, as necessary, to prevent development of significant maintenance problems and in response to acts of vandalism. Some examples of maintenance or repair that will be performed at the Monticello sites follow.

- Planned maintenance: Repository weed control, maintenance of access roads, sumps, ponds, institutional control features, wells, and security systems.
- Unscheduled maintenance: removal of animal burrows on the disposal cell, removal of deep-rooted or other unwanted vegetation.
- Repair: sign replacement, fence repairs, minor erosion mitigation.
- Replanting or reseeding where planned vegetation has not been successful.
- Pond 4: monitoring of conditions (i.e., full, intact), disposal of contents as necessary, as well as eventual decommissioning.

6.2.3 Corrective Action

Corrective actions are nonroutine actions taken to address specific, nonconforming conditions that may lead to significant environmental or public health impacts if not addressed. Corrective actions are addressed in the Contingency Plan. The plan lists various problems and the required actions. The need for corrective action is determined by the cause and magnitude of the problem, the immediate threat to the public or the environment, and the need to comply with the standards. The site inspectors evaluate the problem and prepare a report with recommendations for the next step (e.g., immediate action or continued evaluation) based on the requirements of the Contingency Plan. After EPA and the State review the report and its recommendations, DOE will prepare a corrective action plan and submit it to the regulators. Corrective action begins after the regulators have concurred with the plan.

Two examples of conditions which may trigger corrective action are as follows:

1. During repair of primary and secondary liner in Pond 4, damage to third liner is discovered.

Corrective Action:

- Notify EPA/State of Utah.
- Collect soil samples at 6-inch increments for a total depth of 5 feet and test for contaminants found in pond leachate detection system (LDS) leachate.
- After soil sample analysis is complete and it is determined that no contaminants are found in the soil above background concentrations, repair primary, secondary, and tertiary liners as required. Test all repair seams.
- Resume operations.
- Evaluate need to modify Corrective Action Plan based on information gathered during repairs.

2. Leachate is pumped from LDS sump.

Corrective Action:

- Notify EPA/State of Utah.
- Inspect exposed liner around perimeter and at potential points of short circuiting.
- Evaluate appropriateness of conducting intrusive investigation based on depth of tailing fill present. Perform intrusive investigation if appropriate.
- Subcontractor repairs damaged areas as necessary.
- Subcontractor begins daily review of LDS depth data and calculates/records daily leakage rate.

A Contingency Plan for each of the sites will be developed that will address similar issues prior to any unplanned event requiring corrective action and will be included in the LTSM Plan. Contingency Plans will be submitted in the LTSM Plan package to EPA and the State for regulatory concurrence.

6.2.4 Personnel Health and Safety

All LTSM activities will be performed in accordance with a HASP to minimize risks to workers.

Certain activities such as surface-water sampling and groundwater sampling are performed in accordance with specific HASPs. Inspections of surface features are covered by general health and safety procedures. (See Section 7.0, "Health and Safety.")

6.3 Long-Term Surveillance and Maintenance Plan

DOE will prepare an Umbrella LTSM Plan for the Monticello sites supported by all LTSM Plans for implementation by the LTSM Program. The Plans will address site-specific requirements of the Monticello CERCLA sites. The Plans will be developed in parts as the scope of remediation and restoration activities is defined.

The first part will address the Repository. An outline of the document is in the Final Design and Specification Package for Millsite Remediation. A draft of Part I of the LTSM Plan will be submitted by September 30, 1998.

Part II addresses the contamination that will be left on the properties and in streets and utilities where DOE proposes to apply Supplemental Standards. Part II was submitted to EPA and the State on November 4, 1996.

The third Part will address the LTSM activities that may be required for OU III such as groundwater monitoring, surface-water quality monitoring, and wetlands monitoring. The submittal date for this part of the LTSM Plan will be proposed when the remedy for OU III is selected.

The fourth and last part of the LTSM Plan will address restoration of the Millsite. Depending on the final land use selected and the arrangements that may be made with any future land owner, surveillance and monitoring requirements will be established. Reestablishment of wetlands on the Millsite is required, and

they must be monitored to ensure successful restoration. The submittal date for Part IV will be proposed when the scope of the restoration is determined.

Each part will summarize a *Sampling and Analysis Plan*, *Quality Assurance Project Plan*, *Health and Safety Plan*, and *Contingency Plan* specific to the LTSM activities for that part. These documents will be available to the LTSM staff implementing LTSM requirements. Parts I, II, III, and IV will be submitted in draft form separately to EPA and the State for review and approval.

Parts I, II, III, and IV will be summarized in the Umbrella LTSM Plan, which will be developed from information contained in the different parts. The Umbrella LTSM Plan will be a summary level document. The Plan will describe the scope and schedule for activities that will be undertaken to ensure that contaminants left on the sites do not adversely affect human health and the environment. The Umbrella LTSM Plan and supporting Plans will be provided to the LTSM Program to establish the scope of activities.

A draft outline for the Umbrella LTSM Plan and Repository LTSM Plan are provided in Appendix E of this document.

7.0 Worker Health and Safety Protection

Protection of worker health and safety is critical to planning and execution of the Monticello Projects. Compliance with worker health and safety requirements will be achieved through detailed planning, effective project management, and self-assessment.

The MACTEC-ERS Occupational Safety and Health program is derived from the requirements of 29 CFR 1910.120, "Hazardous Waste Site Operations and Emergency Response," of the Occupational Safety and Health Administration (OSHA).

The *GJO Health and Safety Policy Manual* (GJO 1996a) and the *GJO Site Radiological Control Manual* (GJO 1996c) present the detailed policies, procedures and other requirements applicable to the work performed by MACTEC-ERS. The *Monticello Projects Health and Safety Plan* (DOE 1997b) is derived from the requirements of these manuals. The *Monticello Projects Health and Safety Plan* (DOE 1997b), along with the associated task and site-specific HASPs, cover the tasks implemented on the Monticello Projects. Appendix A to the *Monticello Projects Health and Safety Plan* defines the model task and site-specific HASP. The Monticello Site Safety Coordinator assigned to the Monticello Projects is responsible for completing each task and site-specific HASP, with the assistance and input of the responsible Project Manager before the scope of work addressed by the HASP is started. In addition, the HASP aids in coordinating activities with applicable Radiation Work Permits and Safe Work Permits.

The safety and health hazard analysis evaluates the known and potential site safety and health hazards from available data. It also qualitatively evaluates the risks from potential work exposures for identified tasks to estimate the significance of the exposure. Hazard analysis is an iterative process and will incorporate new information about the sites as it becomes available.

The degree of protection that must be provided is determined by the types and severity of potential exposures. The worker protection requirements are developed on the basis of the hazard analysis, and control measures are assigned according to the applicable industrial safety or industrial hygiene requirements. The HASP identifies appropriate engineering and administrative controls, measures to mitigate temperature extremes, training requirements, exposure monitoring, and site controls.

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8.0 Quality Assurance Management

Monticello Program and Project management is committed to establishing, maintaining, and implementing an effective QA program that achieves quality in all activities through planning, performing, assessing, and continually improving the process. The work performed must comply with the requirements of the GJO QA Program.

Work is accomplished through the resources of people, equipment, and procedures. All management is responsible for ensuring people have the information, resources, and support necessary to complete the work in a safe, efficient, and quality manner. The achievement of quality is an interdisciplinary function led by management and is the responsibility of all personnel.

The GJO QA Program, documented in the *GJO Quality Assurance Standards* (GJO 1996b), will be used as the basis for planning, performing, and documenting project QA activities for the upcoming construction activities at Monticello. Specific QA activities and program elements will be implemented in accordance with the overall QA program requirements, and as planned and scheduled with the Monticello Program Manager.

DOE-AL and its Contractors are required to have QA programs that use a graded approach to meet the requirements of 10 CFR 830.120. The GJO QA Program, documented in the *GJO Quality Assurance Standards* (GJO 1996b), has been accepted by DOE as meeting this requirement. Additionally, the GJO QA Program is designed to adopt and implement the requirements of ANSI/ASQC E4-1994, *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs* (ANSI/ASQC 1995).

The QA Coordinator, designated by the QA Manager, is assigned to assist Program/Project management in defining QA program requirements and providing oversight to Contractor personnel in the implementation of the requirements. A *Monticello Projects QA Program Plan* (QAPP) (DOE 1996c) has been prepared and implemented to define the applicable QA requirements, in a graded manner, and to meet the following project QA objectives.

- To implement the applicable requirements of the QA program as defined in the GJO QA Standards and tailored to the project in QA program and project plans.
- To ensure applicable quality requirements are adequately addressed in the appropriate project documents (e.g., plans, procedures, procurement documents, design documents).
- To implement a quality program that addresses (1) management systems, (2) collection and evaluation of environmental data, and (3) the design, construction, and operation of engineered environmental systems.
- To apply a graded approach to QA requirements that will achieve project goals in an efficient, cost-effective, safe, and productive manner.

The QA Coordinator maintains the QAPP and develops and maintains subordinate QAPjPs when required. Changes to project tasks require a review of the QA program to ensure the specified requirements are maintained current to project activities. QA planning documents for the Monticello Projects are:

- *Monticello Projects Quality Assurance Program Plan* (DOE 1996c, under revision for 1998)
- *Construction Quality Assurance Plan (CQAP) for the Monticello Remedial Action Project, Operable Unit I, Millsite Remediation* (DOE 1995, under revision for 1998)

9.0 Acquisition Strategy

MACTEC-ERS performs subcontracting for the Monticello Projects in accordance with procurement policies, procedures, and provisions of its prime contract. Approved terms and conditions are used for all subcontracts that incorporate the required flow-down clauses from the Federal Acquisition Regulations and DOE Acquisition Regulations.

In the awarding of subcontracts, MACTEC-ERS gives consideration to qualified small businesses, minority (disadvantaged) businesses, women-owned businesses, and labor surplus areas to the maximum extent practicable. MACTEC-ERS procurement procedures mandate small business procurement for construction projects with a value less than \$3 million, unless otherwise approved by MACTEC-ERS Manager of Contract Administration. Requests may be made to open competition to large businesses for projects less than \$3 million if the complex nature of the project or limited competition warrants inclusion of large businesses to ensure adequate competition.

MACTEC-ERS develops solicitations after receipt of a fully approved engineering package. The package normally includes a properly executed purchase requisition, in-house estimate, design drawings, statement of work, general construction specifications, terms and conditions, bid form, and wage determination. The solicitation is mailed to all potential bidders, followed by a mandatory bid tour of the project. Award is made on the basis of the criteria specified in the solicitation after appropriate approvals by MACTEC-ERS management and DOE personnel, if required. Subsequent changes to existing subcontracts are negotiated and approved in accordance with current procedures.

The subcontracts for construction are generally awarded on the basis of sealed bids. However, procurement by negotiation may be used when evaluation of technical proposals is required or there are other appropriate reasons to procure through negotiation.

The successful bidder is issued a subcontract incorporating all requirements of the solicitation. The subcontractor is responsible for performing in accordance with the defined performance period and a schedule accepted by MACTEC-ERS. Performance is monitored daily by Construction Management personnel who document field conditions, construction progress, and proposed changes to the drawings. The procurement representative approves the change and directs the subcontractor to perform.

The procurement representative is responsible for all administrative duties related to the purchase order or subcontract, including maintaining adequate files, tracking deliverables, negotiating modifications, authorizing payments, and closing out the file. All contact with companies for prices, suspensions of work, cure notices, or other administrative items are handled through the procurement representative.

Purchase requisitions of \$2,500 or less generally require that only one company be contacted. Most of these orders are placed on the procurement representative's knowledge that the price is fair and reasonable. For requisitions of more than \$2,500, the procurement representative will make a diligent effort to obtain competitive bids from two or more sources. If situations do not allow competition because of special circumstances, the file will be documented as such in accordance with sole-source procurement procedures.

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10.0 Project Control Systems

Effective project controls are achieved through detailed planning, quality baselines, performance evaluation, funds management, change control, and timely and appropriate corrective actions. The *Project Management Control System Manual* (MACTEC-ERS 1996) defines the integrated planning and control system used to achieve project objectives. This manual is a guidance document that describes the functional interface between project control and funds management.

The requirements of DOE Order 430.1 *Life Cycle Asset Management* (DOE 1995) are implemented. The management objective is to optimize the level of control at the lowest cost to the Government. The level of control for baseline development, project performance, and change management on individual subprojects is consistent with the requirements of DOE Order 430.1.

The referenced DOE-GJO manual also contains detailed procedures on planning and controlling projects. Funds management and change control are integrated with estimating, scheduling, and budgeting.

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11.0 References

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Appendix A

List of Included Properties by NPL Site and Operable Unit

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MVP Operable Unit A Properties

DOE ID	Street	Inclusion Date
MS-00012	380 Abajo Dr	06/08/84
MS-00014	165 N 1st West	01/27/84
MS-00016	65 S 2nd West	03/01/89
MS-00022	216 Uranium Dr	10/14/88
MS-00025	516 Circle Dr	03/01/89
MS-00028	197 Lower Uranium Dr	10/14/88
MS-00030	564 Circle Dr	03/01/89
MS-00031	96 W 2nd North St	02/21/91
MS-00040	280 S Main St	03/01/89
MS-00041	280 S Main St	11/01/84
MS-00042	296 S Main St	02/25/85
MS-00043	296 S Main St	06/08/84
MS-00048	470 S Main St	03/01/89
MS-00049	480 S Main St	06/08/84
MS-00050	496 S Main St	01/27/84
MS-00053	64 E 5th North St	03/01/89
MS-00054	132 E 5th North St	03/01/89
MS-00055	432 North Main St	10/14/88
MS-00059	181 South Main St	06/08/84
MS-00062	316 South 1st East St	10/14/88
MS-00068	449 South Main St	03/01/89
MS-00069	96 East 4th South St	06/08/84
MS-00071	464 South 1st East St	06/08/84
MS-00072	493 South Main St	03/01/89
MS-00073	65 East 5th South St	01/27/84
MS-00074	87 East 5th South St	01/27/84
MS-00075	16 East 5th South St	01/27/84
MS-00076	98 East 5th South	01/27/84
MS-00079	181 East 1st South St	03/01/89
MS-00083	196 East 3rd South	01/27/84
MS-00084	384 South 2nd East	01/27/84
MS-00085	396 S 2nd East St	01/27/84
MS-00086	164 East 4th South	01/27/84
MS-00087	148 East 4th South St	01/27/84
MS-00088	433 S 1st East	01/27/84

MVP Operable Unit A Properties (continued)

DOE ID	Street	Inclusion Date
MS-00091	265 E 1st South St	11/01/84
MS-00092	273 E 1st South St	06/08/84
MS-00093	80 South 3rd East	06/08/84
MS-00094	281 East 1st South St	06/08/84
MS-00096	196 S Third East St	03/01/81
MS-00097	217 South 2nd East	06/08/84
MS-00099	280 South 3rd St	06/08/84
MS-00100	333 South 2nd East	06/08/84
MS-00101	389 South 2nd East	01/27/84
MS-00102	417 South 2nd East	06/08/84
MS-00103	433 South 2nd East	06/08/84
MS-00104	449 South 2nd East	06/08/84
MS-00114	225 S 2nd East St	10/09/85
MS-00124	301 Silverstone West Ln	09/25/89
MS-00126	548 Circle Dr	03/01/89
MS-00130	76 W 3rd South St	03/01/89
MS-00133	217 & 233 South 3rd East	01/27/84
MS-00134	216 South 3rd East	06/08/84
MS-00135	196 South 2nd East St	11/01/84
MS-00136	EG & G AREA 6	06/08/84
MS-00137	600 North Main St	03/01/89
MS-00138	281 East 3rd South	06/08/84
MS-00139	365 South 2nd East	06/08/84
MS-00140	381 East 3rd South	11/01/84
MS-00141	393 East 3rd South	11/01/84
MS-00143	544 E 3rd South St	06/08/84
MS-00145	600 Clay Hill Dr	06/08/84
MS-00147	180 E 4th South St	06/08/84
MS-00148	464 South 2nd East St	09/05/85
MS-00150	416 South Main St	06/08/84
MS-00151	149 W 3rd South St	03/01/89
MS-00152	Cedar Ln (Lot 76)	04/21/94
MS-00153	87 E 5th South St	05/22/87
MS-00154	435 S Main St	05/22/87
MS-00155	S Hwy 191, M-634	05/22/87

MVP Operable Unit A Properties (continued)

DOE ID	Street	Inclusion Date
MS-00156	64 E 4th South	05/22/87
MS-00157	45 S 2nd East St	05/22/87
MS-00159	149 S 2nd East	05/22/87
MS-00161	249 East 2nd South	05/22/87
MS-00162	217 & 249 E 3rd South	05/22/87
MS-00163	264 E Center	05/22/87
MS-00164	64 S 3rd East	05/22/87
MS-00166	365 E 3rd South St	05/22/87
MS-00167	564 East 3rd South St	05/22/87
MS-00168	397 East 3rd South	05/22/87
MS-00170	S Hwy 191	05/22/87
MS-00171	433 South Main St	03/01/89
MS-00174	465 South 1st East St	10/07/88
MS-00183	81 East 3rd South St	09/25/89
MS-00184	South Main St	09/25/89
MS-00185	South 2nd East St	09/25/89
MS-00186	249 South 2nd East St	09/25/89
MS-00187	165 East 4th South	09/25/89
MS-00188	397 South 1st East	09/25/89
MS-00189	164 East 3rd South	09/25/89
MS-00191	165 South 2nd East	09/25/89
MS-00192	226 East 1st South	09/25/89
MS-00193	264 East 1st South	09/25/89
MS-00194	280 East 1st South St	09/25/89
MS-00195	East 3rd South St	09/25/89
MS-00196	265 South 3rd East St	09/25/89
MS-00197	249 B South 3rd East St	09/25/89
MS-00200	262 East Center St	09/25/89
MS-00201	381 South 1st East St	09/25/89
MS-00202	394 South 1st East St	09/25/89
MS-00203	397 South 1st East St	09/25/89
MS-00204	365 South 1st East St	09/25/89
MS-00209	216 East 1st South St	09/25/89
MS-00897	453 S Main St	07/21/94

MVP Operable Unit B Properties

DOE ID	Street	Inclusion Date
MS-00004	32 Blue Mountain Dr	08/30/91
MS-00009	465 Oak Crest Dr	02/02/93
MS-00018	180 W 3rd South St	11/05/90
MS-00024	480 S 1st West St	04/03/90
MS-00029	450 S 200 West St	01/23/91
MS-00034	49 S 100 West St	06/19/90
MS-00037	180 S Main St	02/14/94
MS-00038	16 W 200 South St	06/19/90
MS-00044	364 S Main St	01/31/91
MS-00045	80 W 4th South St	01/23/91
MS-00064	333 S Main St	12/07/92
MS-00070	432 S 1st East St	01/25/90
MS-00080	80 S 2nd East St	08/02/94
MS-00081	197 E 2nd South St	05/30/90
MS-00082	197 E 3rd South St	07/25/90
MS-00089	164 E First North St	02/26/90
MS-00098	248 S 3rd East St	06/19/90
MS-00106	332 E Center	06/19/90
MS-00107	249 A S 3rd East St	12/07/92
MS-00110	317 Meadowlark Ln	05/12/92
MS-00128	516 S Main St	05/30/90
MS-00132	97 N 2nd West St	01/25/90
MS-00146	US Hwy 191/N E Inter S Main	12/05/89
MS-00149	448 S Main St	06/19/90
MS-00158	65 S Second East St	07/25/90
MS-00182	596 South Eldredge Ln	02/26/90
MS-00199	264 East 2nd South St	07/25/90
MS-00206	349 South 2nd West	11/26/90
MS-00207	East 5th North St	01/25/90
MS-00212	300 East 4th South St	01/25/90
MS-00213	East 1st North St	01/25/90
MS-00217	216 East 1st North St	01/25/90
MS-00219	117 East 1st South St	08/23/91
MS-00220	32 East Center St	10/10/91
MS-00221	164 South 1st West St	08/02/94
MS-00222	196 South 1st West St	08/02/94

MVP Operable Unit B Properties (continued)

DOE ID	Street	Inclusion Date
MS-00224	148 East Center	01/25/90
MS-00225	196 South Main St	07/25/90
MS-00226	197 South 3rd East St	12/09/91
MS-00227	145 West 2nd South St	01/14/92
MS-00230	265 South Main St	01/25/90
MS-00234	195 East 1st North St	11/02/93
MS-00235	31 Circle Dr	01/25/90
MS-00238	116 East 3rd South St	01/25/90
MS-00239	549 South Main St	02/26/90
MS-00241	664 East Center St	01/25/90
MS-00242	664 East Center St	01/25/90
MS-00243	South 3rd East St	12/09/91
MS-00244	181 South 3rd East St	12/09/91
MS-00245	South 3rd East St	12/09/91
MS-00246	133 South 3rd East St	12/09/91
MS-00247	17 South 3rd East St	12/31/91
MS-00248	US Hwy 666	07/01/92
MS-00250	US Hwy 666	07/01/92
MS-00251	US Hwy 666	07/01/92
MS-00261	197 East Center St	02/02/93
MS-00267	17 North 1st East St	11/26/90
MS-00270	West 1st North St	04/03/90
MS-00274	216 West Center St	05/30/90
MS-00282	64 N 3rd West St	04/03/90
MS-00283	65 N 200 West	11/26/90
MS-00289	64 B South 2nd West St	11/05/90
MS-00293	233 West Center St	11/26/90
MS-00301	West 3rd South St	11/26/90
MS-00304	333 Abajo Dr	06/18/91
MS-00308	216 South 2nd West St	11/28/90
MS-00313	W 3rd South & W 4th South	08/20/92
MS-00315	248 Uranium Dr	12/11/90
MS-00316	364 South 2nd West St	08/20/92
MS-00318	316 Uranium Dr	01/23/91
MS-00322	48 Meadowlark Ln	12/31/91

MVP Operable Unit B Properties (continued)

DOE ID	Street	Inclusion Date
MS-00323	Meadowlark Subdivision	12/31/91
MS-00326	49 West 4th South St	09/12/91
MS-00329	164 Uranium Dr	12/11/90
MS-00336	416 South 1st West St	02/26/91
MS-00345	380 South Main St	06/19/90
MS-00347	81 West 3rd South St	02/21/91
MS-00351	65 East 4th South St	05/02/91
MS-00352	396 South 1st East St	05/02/91
MS-00356	48 East 3rd South St	05/02/91
MS-00357	332 South 1st East St	05/02/91
MS-00359	148 East 3rd South St	11/29/93
MS-00360	132 East 3rd South St	11/29/93
MS-00361	349 & 333 South 1st East St	05/24/91
MS-00363	248 South 2nd East St	03/27/91
MS-00364	264 South 2nd East St	06/19/90
MS-00365	297 South 1st East St	03/27/91
MS-00367	233 & 249 South 1st East St	03/27/91
MS-00368	217 South 1st East St	03/27/91
MS-00369	180 East 2nd South St	03/27/91
MS-00370	164 East 2nd South St	03/27/91
MS-00375	254 South 1st East St	05/02/91
MS-00382	80 West 3rd South St	06/18/91
MS-00384	65 West 2nd South St	01/31/91
MS-00394	264 South 1st West St	06/18/91
MS-00396	196 West 3rd South St	04/03/90
MS-00397	181 West 2nd South St	02/21/91
MS-00398	253 South 2nd West St	06/18/91
MS-00399	231 South 2nd West St	05/24/91
MS-00405	180 West 2nd South St	01/31/91
MS-00411	48 West 2nd South St	11/26/90
MS-00413	181 South First West St	11/02/93
MS-00414	96 West 2nd South St	06/18/91
MS-00415	64 West 2nd South	03/07/94
MS-00424	49 W 1st South St	02/26/91
MS-00426	165 South Main St	05/24/91

MVP Operable Unit B Properties (continued)

DOE ID	Street	Inclusion Date
MS-00427	165 East 2nd South St	06/18/91
MS-00428	164 South 2nd East St	06/18/91
MS-00429	117 East 2nd South St	06/18/91
MS-00430	133 East 2nd South St	06/18/91
MS-00437	132 S 3rd East St	01/31/92
MS-00438	97 S 2nd East St	04/03/91
MS-00439	249 E 1st South St	09/22/93
MS-00442	S 2nd East St	08/23/91
MS-00443	165 E 1st South St	08/23/91
MS-00444	S 200 East St	08/23/91
MS-00445	149 E 1st South St	08/23/91
MS-00446	164 E Center St	08/23/91
MS-00447	61 E 1st South St	10/10/91
MS-00449	97 E 1st South St	10/10/91
MS-00456	80 E Center St	10/10/91
MS-00459	64 E Center St	10/10/91
MS-00462	132 Uranium Dr	02/21/91
MS-00464	147 W 1st N St	08/20/92
MS-00476	48 S 1st West St	04/03/90
MS-00489	S 2nd West St	08/20/92
MS-00499	416 W Center St	09/22/93
MS-00512	196 W 1st St	01/31/91
MS-00513	180 W 1st South St	01/31/91
MS-00515	17 S 2nd West St	08/27/91
MS-00517	16 S 1st West St	08/27/91
MS-00520	W 1st North St	02/26/91
MS-00523	164 W Center St	01/31/91
MS-00524	49 N 1st West St	06/18/91
MS-00529	116 N 1st West St	01/31/91
MS-00534	164 N 100 West St	06/19/90
MS-00535	117 N 1st West St	01/31/91
MS-00563	248 W 1st N St	05/12/92
MS-00566	N 2nd W St	08/30/91
MS-00578	281 Blue Mountain Dr	06/18/91
MS-00585	33 Blue Mountain Dr	08/27/91

MVP Operable Unit B Properties (continued)

DOE ID	Street	Inclusion Date
MS-00588	264 Mountain View Dr	02/14/94
MS-00622	533 Circle Dr	03/05/92
MS-00623	565 Circle Dr	05/24/91
MS-00656	South 3rd East St	12/31/91
MS-00657	South 3rd East St	12/31/91
MS-00658	81 Meadowlark Ln	12/31/91
MS-00659	80 Meadowlark Ln	12/31/91
MS-00662	381 1st S Meadowlark Ln	12/09/91
MS-00663	97 Meadowlark Ln	12/09/91
MS-00664	316 1st S Meadowlark Ln	12/09/91
MS-00665	364 1st S Meadowlark Ln	12/09/91
MS-00668	Meadowlark Ln	01/31/92
MS-00669	Meadowlark Ln	01/31/92
MS-00689	Meadowlark Ln	12/31/91
MS-00690	Meadowlark Ln	12/31/91
MS-00691	Meadowlark Ln	12/09/91
MS-00692	Meadowlark Ln	12/09/91
MS-00693	Meadowlark Ln	12/09/91
MS-00694	Meadowlark Ln	12/09/91
MS-00695	1st S Meadowlark Ln	12/09/91
MS-00696	1st S Meadowlark Ln	12/09/91
MS-00697	1st S Meadowlark Ln	12/09/91
MS-00698	1st S Meadowlark Ln	12/09/91
MS-00699	1st S Meadowlark Ln	12/09/91
MS-00700	1st S Meadowlark Ln	12/09/91
MS-00701	1st S Meadowlark Ln	12/09/91
MS-00702	1st S Meadowlark Ln	12/09/91
MS-00703	1st S Meadowlark Ln	12/09/91
MS-00704	1st S Meadowlark Ln	12/09/91
MS-00705	1st S Meadowlark Ln	12/09/91
MS-00706	1st S Meadowlark Ln	01/07/92
MS-00707	1st S Meadowlark Ln	01/07/92
MS-00708	1st S Meadowlark Ln	01/07/92
MS-00709	1st S Meadowlark Ln	01/07/92
MS-00710	1st S Meadowlark Ln	01/07/92

MVP Operable Unit B Properties (continued)

DOE ID	Street	Inclusion Date
MS-00711	1st S Meadowlark Ln	01/07/92
MS-00712	1st S Meadowlark Ln	01/07/92
MS-00713	Meadowlark Ln	01/07/92
MS-00714	Meadowlark Ln	01/07/92
MS-00715	Meadowlark Ln	01/07/92
MS-00716	Meadowlark Ln	01/07/92
MS-00717	Meadowlark Ln	01/07/92
MS-00718	Meadowlark Ln	01/07/92
MS-00719	Meadowlark Ln	01/07/92
MS-00721	Meadowlark Ln	01/31/92
MS-00722	Meadowlark Ln	01/31/92
MS-00723	Meadowlark Subdivision	12/31/91
MS-00726	N Main St	08/30/91
MS-00738	696 N Main St	08/30/91
MS-00742	E 6th N St	08/30/91
MS-00743	81 E 6th North St	01/14/92
MS-00747	E 5th North St	02/21/91
MS-00748	550 N Main St	02/21/91
MS-00749	264 N 2nd W St	08/27/91
MS-00756	364 W 1st N St	06/18/91
MS-00758	97 N 4th W St	08/30/91
MS-00782	97 E 5th North St	02/21/91
MS-00799	N Main St	08/30/91
MS-00800	348 N Main St	09/12/91
MS-00802	416 N Main St	09/12/91
MS-00806	480 N Main St	06/18/91
MS-00826	164 S 2nd West St	01/31/91
MS-00831	432 W Center St	02/26/91
MS-00844	180 Uranium Dr	09/12/91
MS-00848	301 Silverstone W St	01/23/91
MS-00861	349 Abajo Dr	08/27/91
MS-00862	A33230364202	09/12/91
MS-00867	Uranium Dr	08/30/91
MS-00876	265 Lower Uranium Dr	02/21/91
MS-00877	249 Lower Uranium Dr	02/26/91

MVP Operable Unit B Properties (continued)

DOE ID	Street	Inclusion Date
MS-00879	A33230364814	03/05/92
MS-00883	549 S Main St	03/05/92
MS-00884	S Main St	06/18/91
MS-00891	South Hwy 191	01/14/92
MS-00923	Near Hwy 191	09/12/91
MS-00936	E Hwy 666	09/12/91
MS-00946	E Hwy 666	08/30/91
MS-00952	E Hwy 666	11/02/93
MS-00956	E Hwy 666	01/31/92
MS-00958	E Hwy 666	03/05/92
MS-00962	549 S Main St	01/31/91
MS-00969	E Hwy 666	10/10/91
MS-00973	E Hwy 666	09/12/91
MS-00981	South 14th East St	02/21/91
MS-00986	Monticello 84355 (also 33523E323600)	01/08/92
MS-00992	E Hwy 666	03/05/92
MS-00999	S Hwy 191	02/11/92
MS-01001	E Hwy 666	03/05/92
MS-01002	33S24E324801	09/12/91
MS-01037	S Hwy 191	03/05/92
MS-01039	S Hwy 191	01/31/92
MS-01058	717 Abajo Dr	02/02/93
MS-01061	264 E 2nd South St	07/25/90
MS-01063	N Main St (also A33230254806)	09/12/91
MS-01064	N Main St	02/11/92
MS-01069	S Hwy 191	03/05/92
MS-01070	549 S Main St	03/05/92
MS-01071	East Center St	05/12/92
MS-01072	549 S Main St	01/07/94
MS-01073	381 S 1st West St	01/25/90
MS-01076	1057 N Main St	11/02/93
MS-01079	49 W Fourth St	02/14/94

MVP Operable Unit C Properties

DOE ID	Street	Inclusion Date
MS-00002	248 Silverstone West Ln	11/06/92
MS-00013	381 Abajo Dr	11/06/92
MS-00020	220 & 222 W 4th South St	11/06/92
MS-00039	248 S Main St	03/05/92
MS-00115	332 North Creek Lane	07/10/90
MS-00117	North Creek Ln -A00170000070	11/06/92
MS-00125	401 Silverstone West Ln	11/06/92
MS-00127	549 Circle Dr	11/06/92
MS-00144	516 E 3rd South St	01/25/90
MS-00169	417 North Creek Ln	11/06/92
MS-00218	33 North Main St	04/03/90
MS-00233	96 West 4th South St	01/25/90
MS-00266	80 North 1st East St	11/06/92
MS-00271	17 North Main St	11/06/92
MS-00275	49 N 2nd West	04/03/90
MS-00281	96 N 3rd West St	07/25/90
MS-00284	249 W 1st North St	02/21/91
MS-00325	481 South 1st West St	11/06/92
MS-00328	417 South 1st West St	02/21/91
MS-00330	181 West 4th South St	03/05/92
MS-00338	396 South 1st West St	11/06/92
MS-00419	154 South Main St	08/05/92
MS-00425	33 W 1st South St	02/21/91
MS-00451	N Creek Ln (Lot #3)	07/25/90
MS-00475	32 N 2nd West St	11/06/92
MS-00482	564 Oak Crest Dr	11/06/92
MS-00551	249 N 1st W St	01/23/91
MS-00600	32 Park View Dr	11/06/92
MS-00608	265 Cedar Ln	11/06/92
MS-00620	596 Circle Dr	01/31/91
MS-00624	N Creek Ln	11/06/92
MS-00750	248 N 2nd W St	08/30/91
MS-00768	E Hwy 666	08/20/92
MS-00917	E Hwy 666	11/06/92

MVP Operable Unit D Properties

DOE ID	Street	Inclusion Date
MS-00111	539 E Center St	05/30/90
MS-00112	665 E Center St	06/19/90
MS-00685	1149 N Main St	02/21/91
MS-00688	1149 N Main St	02/21/91
MS-00910	697 E Center St	06/18/91
MS-00959	1280 E Center St	10/10/91

MVP Operable Unit E Properties

DOE ID	Street	Inclusion Date
MS-00175	578 South Eldredge Ln	10/07/88
MS-00177	562 Eldredge Ln	10/07/88
MS-00970	E Hwy 666	09/12/91
MS-00971	E Hwy 666	09/12/91
MS-00972	E Hwy 666	01/14/92
MS-00987	33524E323601	01/31/92
MS-01006	E Hwy 666	09/12/91
MS-01078	Southern Sec. Pinto Power Sta	11/29/93

MVP Operable Unit F Properties

DOE ID	Street	Inclusion Date
MS-00051	533 S Main St	06/08/84
MS-00078	96 N 1st East St	10/14/88
MS-00108	395 E 3rd South St	06/08/84
MS-00116	349 North Creek Ln	11/06/92
MS-00205	1117 East Clay Hill Dr	01/25/90
MS-00314	348 South 2nd West St	11/06/92
MS-00344	48 West 4th South St	08/02/93
MS-00433	145 South 1st East St	06/18/91
MS-00858	449 Silverstone E Ln	11/06/92
MS-00859	449 Silverstone East Ln	11/06/92

MVP Operable Unit G Properties

DOE ID	Street	Inclusion Date
MS-00410	116 S 1st West St	08/25/95
MS-00686	1149 N Main St	08/25/95
MS-00918	E Hwy 666	01/12/96
MS-01082	280 S Main St	03/01/89
MS-81050	South Hwy 191	11/01/96
MS-81086	South Hwy 191	11/26/96
MS-81088	North Hwy 191	05/16/97
MS-81094	North Hwy 191	11/26/96
MS-81095	East Hwy 666	11/01/96
MS-81097	North Hwy 191	11/26/96

MVP Operable Unit H Properties

DOE ID	Street	Inclusion Date
MS-00176	South Eldredge Ln	10/07/88
MS-00892	US Hwy 191	11/15/93
MS-00895	US Hwy 191	11/15/93
MS-01020	US Hwy 191	08/02/94
MS-01021	US Hwy 191	09/12/91

MMTS Operable Unit II Properties

DOE ID
MP-00105
MP-00178
MP-00179
MP-00180
MP-00181
MP-00198
MP-00211
MP-00391
MP-00845

MMTS Operable Unit II Properties (continued)

DOE ID

MP-00886
MP-00887
MP-00888
MP-00947
MP-00948
MP-00949
MP-00950
MP-00951
MP-00963
MP-00964
MP-00988
MP-00990
MP-01077
MP-01083
MP-01084
MP-01040
MP-01041
MP-01042
MP-01080
MP-01102

Properties that are also being considered for application of supplemental standards

MP-00391
MP-01077
MP-01041

Properties that are also in OU III for the area in the Montezuma Creek Floodplain

MP-00951
MP-00990
MP-01084

MMTS Operable Unit III Properties

DOE ID	Street
MG-00951	(creek flood plain only)
MG-00990	(creek flood plain only)
MG-01026	
MG-01027	
MG-01028	
MG-01029	
MG-01030	
MG-01033	
MG-01084	(creek flood plain only)

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Appendix B

Definition of Design Submittal Content

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Appendix B

Definition of Design Submittal Content

The following proposed definitions of design content are different from the definitions of design documents provided in association with the RDWP (DOE 1992b). The changes pertain to the limited extent of the design report that will be prepared. Design reports will now be focused towards an evaluation of compliance with ARARs.

Conceptual Design (30 Percent Design)

Conceptual design submittals will focus on major design concepts and the ability of the concepts to achieve compliance with the ARARs in question. Conceptual submittals will contain the following components:

Design Drawings:

Drawings will show only the site plan layout and design concept (e.g., schematics) of major components of the project that are necessary to indicate how ARAR compliance will be achieved. Sizing and dimensions will be identified sufficiently to portray the design concept. A preliminary drawing sheet index will be included indicating the layout and content of the final drawing set.

Design Criteria:

Design criteria for all major components that are necessary to demonstrate ARAR compliance will be identified to indicate the basis for design. Design criteria for minor components may or may not be included.

Design Calculations:

Initial calculations performed to demonstrate the ARAR compliance aspects of the project will be included.

ARAR Compliance Review:

All ARARs affecting the design will be identified and discussed as to how the design will comply with each respective ARAR.

Intermediate Design (60 Percent Design)

The 60 percent intermediate design submittal represents a design that is in a developmental stage. Its purpose is to demonstrate that the design is progressing and to allow reviewers an opportunity to determine if issues of concern are being addressed properly. It is not intended to be biddable nor constructible. The 60 percent intermediate design submittal will contain the following components.

Design Drawings:

Drawings will show the overall project layout and details of major components of the project that are necessary to indicate how ARAR compliance will be achieved. Sizing and dimensions will be

identified sufficiently to portray the design concept and final optimization will not be complete at this stage. Some, but not all, supporting details will be included. The drawings will be in a developmental stage and will not be complete nor coordinated within themselves. Anticipated drawings and sheets that will become part of the final plan set will be identified but may not be included.

Design Basis Report:

The report will identify the design basis and criteria and will indicate how the design of major components will perform to meet the ARARs and satisfy the requirements of the ROD. Design criteria for other design components also will be identified. All ARARs affecting the design will be identified and discussed as to how the design will comply with each respective ARAR.

Design Calculations:

All calculations required to support the design in compliance with ARARs will be identified and will be complete.

Construction Specifications:

All specification sections necessary to support the project will be identified. Sections will be in various stages of completion ranging from partial drafts to rough drafts. Specifications will not be coordinated with the drawings nor within themselves.

Pre-Final Design (90 Percent Design)

Pre-Final design submittals will be complete, biddable, and constructible packages that are final except for last minute minor regulatory comments that need to be incorporated into the design report and the contract documents prior to bidding. The submittal package will include design drawings, a design report, design calculations, and construction specifications.

Final Design (100 Percent Design)

Final design submittals will be the same as the Pre-Final Design submittal but will incorporate agreed upon regulatory comments from the Pre-Final submittal.

Appendix C

Monticello Projects Funding

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Funding Levels for Monticello Projects*

	Prior Years	FY 98	FY 99	FY00	FY 01	FY02
Annual Funding Level						
MRAP	106,900,745	17,051,000	28,248,000	16,030,000	11,230,000	11,500,000
MVP	33,285,351	5,020,000	4,150,000	1,440,000	1,210,000	
MSG	8,873,194	2,220,000	1,930,000	4,530,000	2,560,000	
	149,059,290	24,291,000	34,328,000	22,000,000	15,000,000	11,500,000
Cumulative Funding Level						
MRAP	106,900,745	123,951,745	152,199,745	168,229,745	179,459,745	190,959,745
MVP	33,285,351	38,305,351	42,455,351	43,895,351	45,105,351	45,105,351
MSG	8,873,194	11,093,194	13,023,194	17,553,194	20,113,194	20,113,194
	149,059,290	173,350,290	207,678,290	229,678,290	244,678,290	256,178,290

*Costs beyond the year FY 2001 for Long Term Maintenance and Surveillance are included in the funding request for the LTSM Program. The funding estimate for the LTSM Program includes supplemental standards LTSM activities, OU 1 LTSM activities and assumes operation and maintenance of an active groundwater restoration program for OU III.

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Appendix D

Action Plan

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Action Plan to Mitigate Properties Failing First Remediation Attempt

Under the FFA for the MVP NPL Site, the technical requirements of the UMTRCA and the Standards for Remedial Action at Inactive Uranium Processing Sites are ARARs for remediation of the properties at this CERCLA site. The regulations state that reasonable effort shall be made to achieve an annual average RDC measurement not to exceed 0.02 WL. In any case, the RDC shall not exceed 0.03 WL. The DOE has remediated several properties and subsequent RDC measurements were above the 0.03 WL requirement. The DOE will develop an Action Plan addressing the activities that will be taken to achieve radon concentrations of 0.03 WL or lower. The content of the Action Plan and the general approaches that might be used to reduce radon concentrations are discussed below.

Initially, an Action Plan will be developed that addresses the status and plans for the properties that are currently known to exceed the 0.03 WL. Many of them have already been reevaluated, corrective actions taken, and track etch cups installed in the buildings again. Subsequently, if new RDC measurements show levels above 0.03 WL subsequent to remedial action, an action plan will be developed for the property within 60 calendar days of receipt of the data by the remedial action contractor. The plan will include a description of the actions to be taken and a schedule for implementing them.

The general procedures that are taken by the remedial action contractor after an RDC measurement exceeding 0.03 WL is obtained are as follows:

- Determine if additional subsurface characterization is warranted to assess possible presence of additional contamination adjacent to the foundation structure.
- Conduct additional characterization of the structure.
- Evaluate other sources of radon; some that have been identified in the past include natural radon emitting materials in the structure, movement of radon along utility trenches and basement sump pumps that pull radon from the subsurface.
- Based on the information obtained, select an appropriate plan for mitigating the radon concentration. This may be by active or passive venting, removing any additional source, and/or blocking the pathway that is the source of radon.
- Implement the mitigation plan and take additional radon measurements.

If the radon measurements fail again, DOE will work with the EPA and the State to determine if any additional steps are appropriate.

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Appendix E

LTSM Outline

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Outline for the Monticello Mill Tailings Site Umbrella Long-Term Surveillance and Maintenance Plan

1.0 Introduction

- 1.1 Scope (Repository; City Streets; Pinyon/Juniper properties; Highway 191; Operable Unit III; Millsite) — defines what this plan covers.
- 1.2 Monticello Mill History — discusses general historical background.
- 1.3 Waste Materials — summary of waste materials generated by Millsite operations.
- 1.4 Responsible Parties — summarizes respective roles of DOE, EPA, and the State of Utah regarding activities covered by this plan.
- 1.5 Site Background — summarizes geology, hydrology, and climate.

2.0 Long-Term Surveillance Requirements

- 2.1 Summary level discussion of Repository Long-term Surveillance requirements.
- 2.2 Summary level discussion of City Streets Long-term Surveillance requirements.
- 2.3 Summary level discussion of Pinyon/Juniper properties Long-term Surveillance requirements.
- 2.4 Summary level discussion of Highways 191/666 Long-term Surveillance requirements.
- 2.5 Summary level discussion of Operable Unit III Long-term Surveillance requirements.
- 2.6 Summary level discussion of Millsite Long-term Surveillance requirements.

3.0 Inspection Report — summarizes content and specifies distribution of the annual report. For example, typical report content includes inspection results with recommendations for maintenance and items of interest for subsequent inspections. States that copies of the annual inspection reports will be submitted to EPA and the State of Utah and that these reports will be summarized in the 5-year reviews.

4.0 Emergency Measures and Contingency Plans — summarizes agreements with other Federal, state, and local agencies for notifying DOE in case of seismic and meteorological events, human intrusion, and vandalism. Lists emergency telephone numbers, addresses, and notification protocols.

- 4.1 Summary level discussion of Repository contingency requirements.
- 4.2 Summary level discussion of City Streets contingency requirements.
- 4.3 Summary level discussion of Pinyon/Juniper properties contingency requirements.
- 4.4 Summary level discussion of Highways 191/666 contingency requirements.
- 4.5 Summary level discussion of Operable Unit III contingency requirements.
- 4.6 Summary level discussion of Millsite contingency requirements.

5.0 Quality Assurance — describes basis and goals for plans and references the DOE Long-Term Surveillance and Maintenance (LTSM) Program Quality Assurance Program Plan (QAPP) that covers activities at all LTSM sites assigned to the Program. Notes that after the Monticello projects are complete, the QAPP will be modified to cover specific considerations for the Monticello sites that are not already covered. Also briefly summarizes the Quality Assurance Project Plan (QAPjP).

6.0 Sampling and Analysis — describes basis and goals for plans. States that Sampling and Analysis plans for required monitoring will be developed and referenced as necessary to assure compliance with established protocols.

7.0 Health and Safety — describes basis and goals for plans and states that Health and Safety plans will be developed as necessary to support required operations.

8.0 Reporting and Record Keeping — defines reporting protocols, the types of records to be maintained, and required record storage and maintenance procedures for future reference. EPA and the State of Utah will receive copies of annual inspection reports. All records in storage for the project will be open to the public.

9.0 References — cites background documents, support documents, defining regulations, other agreements.

Outline for the Monticello Mill Tailings Site Repository and Pond 4 Long-Term Surveillance and Maintenance Plan

1.0 Introduction

- 1.1 Legal and Regulatory Requirements — summary of applicable or relevant and appropriate regulations (ARARs) that govern LTSM activities for the Repository and Pond 4.
- 1.2 Site Location — highway map and directions to site; legal description of the Repository site.

2.0 Site Background Information

- 2.1 Geology — summary of geology of Repository site.
- 2.2 Hydrology — summary of hydrology of Repository site.
- 2.3 Maps, as-builts, and photographs for the Repository.
- 2.4 Permanent Site Surveillance Features for the Repository — signs, monuments, fencing, Pond 4, etc.

3.0 Site Inspection of Physical Components and Environmental Monitoring for the Repository and Pond 4

- 3.1 Inspection Frequency — specifies inspection frequency; in general, annually; more frequently for certain features, such as the Repository vegetative cover and leak detection system (LDS), early on.
- 3.2 Inspection Team — specifies a recommended skill mix.
- 3.3 Preparation for Inspection — discusses review materials and pre-inspection briefings.
- 3.4 Repository Inspection and Inspection Checklists — summarizes the purpose and content of the checklist
- 3.5 Site Inspection Maps — describes as-built map or maps, updated following each inspection. The maps identify the locations of specific features (such as a newly developing rills) of interest to the inspection. Positions of features of interest are tied to easily located field features to assist future inspectors in locating the item.
- 3.6 Vegetation Monitoring — discusses necessary monitoring following the warranty period, such as vegetation density and invader species.
- 3.7 Landform-Modification (Erosion) Monitoring (Repository) — discusses tracking gully development; riprap displacement (by humans or nature); documenting the trends.
- 3.8 Burrow Monitoring — discusses potential for animal burrows that should be prevented from impacting tailings.
- 3.9 Pond 4 and Repository Monitoring of the leachate collection and removal systems (LCRS) and LDS — discusses monitoring goals and requirements

4.0 Inspection Report — describes the content and distribution of the annual report. Report will describe inspection results with recommendations for maintenance and items of interest for subsequent inspections. Copies of the annual inspection reports will be submitted to EPA and the State of Utah. These reports will be summarized in the 5-year reviews.

5.0 Custodial Maintenance — addresses repository weed control, access roads, sign replacement, minor erosion mitigation, LCRS and LDS sumps, pond 4 upkeep, fence repairs. States, for example, that the sumps will have O & M manuals and that Pond 4 may require repair of tears in the liner.

6.0 Contingency Plans — summary of contingency plan contents. Contingency plans are complete for Repository, Pond 4, LCRS, and LDS. Plans will be developed for situations such as significant erosion and significant vegetation failure. All performance standards that would trigger corrective actions will be specifically identified.

7.0 Pond 4 Decommissioning — summary of Pond 4 decommissioning plan including criteria for determining when decommissioning should commence.

8.0 References